

fashion knit course outline

for hand knitting machines



by regine faust

B. Diane Landon
4326 Central Avenue
Indianapolis, IN 46205
317-283-4988

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Regine Faust
Master of Knit
Sheridan College
Toronto, Ontario

Betty Michaud
Assistance

Peter Walker
Photography

Ewa Lavoy
Layout



Regine Studio
Knit Designs
Toronto, Ontario

by regine faust

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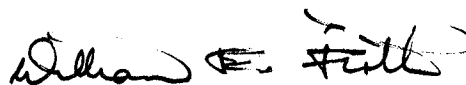
PREFACE

Since man's domestication of animals to provide him with a consistent supply of food and clothing, wool products have been of importance in providing the means of withstanding climatic conditions. The transition from the sheep's back to the finished garment has involved the traditional craft of hand knitting basically unchanged throughout the centuries.

Technology has changed the patterns of our lives and inevitably the knitting process has been affected by the modern trend to improve methods and accelerate production. The knitting machine which forms the basis for this book, is a tribute to this applied ingenuity and has, over the years, passed through several developmental stages that removed many earlier problems. Through improved production these machines are now reasonably inexpensive and uncomplicated, enabling the individual with some basic skills and knowledge to create an outstanding range of products.

The knitting machine gained rapid domestic acceptance but has been largely ignored in the programmes offered by schools and colleges. Regine Faust has been one of the few to understand the potential of this machine as a versatile tool for fashion students and has brought sound technical knowledge and a background as a creative designer to initiate a unique teaching programme. It offers to students the opportunity to learn an art form, which, as it is ideally suited to Canadian conditions, will undoubtedly encourage the establishment of similar studies in other educational institutions.

The success of a programme which pioneers new methods as a knitting course at Sheridan has done, requires a high degree of dedication, discipline and organisation on the part of the instructor. It is indeed, an important occasion when the accumulated results of so many years of intensive research and study are made available to all those interested in learning more about the techniques developed in this book.



William E. Firth
Dean
School of Visual Arts
Sheridan College

INTRODUCTION

This book contains the knitting exercises used in the 2 year fashion knit course, as I taught it for 10 years at Sheridan College in Oakville, Canada. I also used it to introduce the knit design course at the Fashion Institute of Technology in New York. Today it is the base for knitting seminars and work shops which I give throughout the country.

It is NOT a beginners instruction book for explaining the first steps of machine knitting. They are usually well covered in the manuals or demonstrated when the machine is bought. However it teaches all the different skills required to make use of the full capacity of the knitting machine as a versatile tool to create fashion-knit-garments. It is a perfect guide to everyone who wants to learn more than just the basic steps about machine knitting. It starts where the manuals leave off.

The course on which the book is based was originally developed to teach fashion students to become knit designers. But the various excercises, well explained, have also been used by many home knitters to improve their skills in a self teaching manner for pleasure or profit.

In the many years I have tested this course through my knit instruction sheets with different groups of students in the colleges and in work shops and evening classes, it has proven to be a successful aid. This has led to the thought of making it available in book form for students and professionals as a guideline and reference to all knitters.

Each lesson or exercise teaches a basic skill to achieve certain required shapes or outlines through manipulation of stitches and rows, or through tension.

The assignments make use of different settings of levers and dials to form a variety of stitch patterns and textile structures, which make it possible to design freely.

The exercises are combined in groups. Each group starts with a page entitled "teaching points", which gives an outline of the whole subject.

The machine I used in Canada to develop the course is a 200 needle flat bed hand knitting machine with a computerized punch card system, which is sold under the name of Singer, Studio, Knitmaster or Empisal throughout the world. I only mention this because our sheets are mainly worked out for this particular machine, but they can also be applied with minimal alteration to different machines, such as Brother, Yuki or Toyota, build on similar systems.

The single bed machine can be transformed into a double bed machine by adding a ribbing attachment. The technique as such is explained well in the manual, but it would fill another book to explore all the design possibilities of double bed knitting.

Naturally, the course as it is today will change from year to year. The technology of the machine develops new areas. My own graduates will go out and design or teach and will add to it and develop new approaches but I am sure the book will still function as a basic guideline or reference text to set up any fashion knit programm.

Regine Faust



“WHICH IS WHICH”

I just want to give you a little code about "which is which" of the different levers and needle positions of the Toyota and Brother machines in relation to the Singer machine which I am using. All three machines have a 24 field punch card system, so all cards fit, only the levers and dials are named differently. I do not mention Studio, Knitmaster or Empisal because they are the same machines.

Disconnect pattern panel from carriage (page 6)

Singer: put side levers to the front (▲)

Toyota: use card levers (on Model 901)

Brother: use change knob accordingly

Partial knit or short rows (page 4)

Singer: put front or russel levers to I-position, while needles are in D-position

Toyota: use partial knit levers

Brother: put holding cam levers to H

Needle positions (page 3)

	Singer	Toyota	Brother
none working position:	A	A	A
general working position:	B	B	B
pattern knitting position:	C	C	C & D
short row or holding position:	D	E	E

Carriage Dial position

	Singer	Toyota	Brother
stockinette		plain	NL
slip		empty	part
tuck		tuck	tuck
punch lace		-	-
knit-in		color	MC

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The blank pages between the chapters are for extra notes or own additions.

START THE COURSE

My introduction of the course in the first lesson is a short explanation of what a KNIT is and how it is formed.

How old is this skill? Pieces of knit have been found in old Egyptian tombs. Sailors and shepherds around the world have used the technique long before it became a household craft.

I show the class a collection of many different knitted samples out of my own portfolio, explaining the different techniques one can use, their effects and combinations.

I also explain the two basic ways of making a garment out of the knit. The cut and sew finish and the knit to shape method, which is carefully calculated.

Then I thread the machine, show how to move the carriage, start knitting and let all students themselves knit several rows. I answer questions and discuss the program outline with the students. That usually takes care of the first lesson.

In the next lesson I explain all the preliminaries required to get the knitting started.

1. The wool winder and how it works; we wax the yarn and make a perfectly shaped ball, where the thread can be pulled out easily and evenly by the machine, while knitting.
2. The row counter, how it functions and its importance.
3. The needle position. Page 3.
4. Front levers and their relationship to needle positions. Page 4.
5. The gauge and gauge window. Page 5.
6. Tension and its relation to gauge. Page 5.
7. Then we thread the machine, unthread and rethread again.

Start the Course (continued)

8. The importance of centre.
9. We cast on. I use a method to crochet the cast on stitches to selected needles in D position, using the latch tool. This method gives a perfect and dependable edge which we use throughout the course.
10. After all students have practised the cast on, I let them knit 40 to 50 rows.
11. Then we carefully unravel 1 row.
12. We slip over all needles without touching them to bring the carriage to the side which our wool is on. Page 6.
13. We knit again, drop a few stitches and learn how to repair that. Knit a few rows over it again.
14. Then take off on contrast yarn. Page 7.
15. Put the stitches back to the machine, and knit over it. Page 7.
16. Cast off. Page 8.

From now on I will give each lesson a different assignment. The sequence should be flexible as I mentioned before, due to fashion priorities, but I would keep the first 6 to 7 lessons at the beginning of the course because they teach the essentials for the first cut and sew sweater.

We have 4 needle positions on our needle bed:

A Position - Needles are in "out of work" or resting position.

They will not be touched by the carriage and therefore never knit. If they are pushed to A position while knitting, the stitches must be transferred to the adjacent needles, otherwise they drop. Needles left in A position create a "float" which can be used for different patterns.

B Position - Is the regular working position.

All the B position needles knit.

C Position - The stitches are behind the needle latches, close to the sinker bed, but not touching it. The latches have to remain completely open, otherwise the latches will close and drop the stitches. If one pushes the needles straight back to B-position, the stitches will also drop off, because the latches have closed. But, all stitches will knit safely back to B-position by moving the threaded carriage over them, provided the C-position is properly applied. This position is used for different stitch patterns.

D Position - Needles are not knitting if front levers are on I, but they knit back to B position if front levers are on II. This position is used for "Short row knitting" or partial knit, as well as for different stitch patterns.

FRONT LEVERS AND THEIR RELATION TO NEEDLE POSITIONS

Position I: Needles in A position are not touched.
Needles in B position knit normally.
Needles in C position knit back to B position.
Needles in D position are not touched.

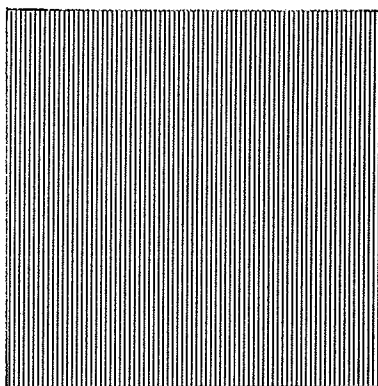
Position II: Needles in A position are not touched.
Needles in B position knit normally.
Needles in C position knit back to B position.
Needles in D position knit also back to B position.

It is important that all stitches on D-position needles are behind the latches, close to the needle bed, otherwise they will drop regardless of lever positions.

NOTE: For partial knitting (short rows), front levers must be on I. If they are on II, the needles "in hold" or D position are knitted back to B position.

Move the carriage back and forth a few times with front levers on I, pulling some needles out to different positions, and watch what they are doing. Repeat the same with front levers on II.

THE GAUGE WINDOW



Cut a 5 cm square window in a piece of cardboard. Try to be very exact. The "G A U G E W I N D O W" will be used throughout the course to count stitches and rows as a basis of your calculation.

TENSION AND ITS RELATION TO GAUGE

Exercise: Knit 3 swatches. Cast on 40 stitches, knit 50 rows.

Knit sample 1 on tension 7

Knit sample 2 on tension 9

Knit sample 3 on tension 5

Take off on contrast yarn, and block all 3 swatches and compare them. Count the stitches and rows of each sample through the gauge window. This 5 cm count in width (stitches) and length (rows) enables you to calculate the necessary number of stitches and rows to make up any pattern piece.

You can see for yourself, what an important role the tension plays. Make a habit of always putting the TYPE OF WOOL, the TENSION used and the GAUGE on to every piece of your paper pattern.

HOW TO MOVE THE CARRIAGE OVER THE KNIT WITHOUT KNITTING OR DROPPING STITCHES

1. To move carriage over stitches in B position without dropping them:

- a) Put dial on slip
- b) Put side levers to front (▲) which disconnects the carriage from pattern panel.
- c) Front levers do NOT matter

It is not even necessary to unthread the feeder, though one avoids any possibility of unnecessary loops by doing so. The carriage now slides over the knit without touching it. This is especially important to bring the computer memory back to a certain row, after some repair work.

If side levers are to the back (▲) all stitches will drop!

2. One can also move the carriage (threaded or unthreaded) over all stitches in D position. Dial stays on stockinette, front levers are on I, side levers do not matter.

TAKING OFF ON CONTRAST YARN

A: for turning the knit from purl side to knit side.

B: for reducing width or widening fabric within the knit
(not at the sides).

A: Exercise - Cast on 40 stitches, knit 20 rows.

Take off on contrast yarn.

Turn and put back to machine.

Knit 20 rows. Repeat 2 more times.

B: Cast on 50 st. Knit 40 rows. Take off on contrast yarn.

Put back to machine on same side, always putting 2 stitches
to one needle, (reduce to half).

Knit one row on tension 3.

Knit 21 rows on regular tension and cast off.

THE CAST-OFF

In my experience most beginners have great difficulty in learning the "CAST-OFF", because at first it is rather confusing, which one does not realize when one is used to it as a quick, though unloved routine.

I put the single phases step by step on my instruction sheet and found it was a great help to the students to do it really slowly in the beginning, until it became a routine for them also. Let's start for the beginning at the right side. The yarn is at right. Later we can do it from left to right too.

1. Take the One-Prong Transfer Tool and pull the first needle out, so that the stitch slips behind the latch.
2. Push same needle straight back. The latch closes and the stitch slips on to the tool.
3. Lift the stitch with the tool and transfer it to the next needle.
4. Pull both stitches behind the latch.
5. Lift the yarn into the needlehook (in front of the latch).
6. Pull the needle back with your right hand, knitting the yarn through both stitches.
7. Push same needle out again, until the stitch slips behind the latch.
8. Repeat from 2.

BASICS OF BLOCKING

The blocking or steaming of the knitted pieces, before sewing them together, is a very important step in the process of achieving a perfect garment.

Nothing is pulled out of shape, or flattened as easily as a knit, and it is very difficult, if not impossible, to bring it back again to shape.

We are neither IRONING the knit nor are we actually PRESSING it. We are gently moving the iron over the surface, releasing steam and letting the fabric rest on a flat surface (a blocking board) to set.

Special care has to be applied to the edges. Some yarns curl more than others.

To block a "made to measure" garment-piece, one has to outline the pattern shape with pins on the blocking board, then pin the knit into that shape, steam it and let it set. Avoid "scalloped edges", rather stroke the knit gently toward the outline. One can also pin the knit over the paper pattern, but that often ruins the paper, making it impossible to re-use it. Another way of blocking in form is to mark the pattern shape onto a factory cotton sheet and pin the knitpiece over that.

To block small pieces or samples, I usually do not pin at all. I first steam the cast-on and cast-off edges, which curl to the purl side, weighting them down with little wooden blocks (2" by 1" pieces of scrap wood) over the edges. I leave the blocks for a while until the fabric is set. Then I turn the samples to the knit side and steam the side edges in the same manner.

EXERCISE FOR BLOCKING

Knit 2 samples, approximately 10 cm by 15 cm. Try to calculate with your gauge window the number of cast-on stitches and the number of rows. (The amount of stitches and rows which you count in your gauge window gives you 5 sq. cm) to get the approximate size.

Use row counter, properly set.

Block the finished samples 2 different ways.

Block the first sample without pinning it, by using the wooden blocks to set the edges. These wooden blocks are a very handy gadget for blocking small pieces or edges. I usually keep a basket full of them beside my ironing board. They are scrap pieces of 1" x 2" in different small lengths, which are sanded.

Block the second sample by pinning it. Avoid "scalloped edges" and be careful not to pull it out of shape. Make a paper pattern 10 x 15 cm or use a square if necessary, to get the exact size.

THE TENSION

We have already seen in our first GAUGE exercise, page 5 , what the tension does. We knitted 3 samples with the same yarn, and the same number of needles and rows, but 3 different tensions, and we got three different sample sizes.

THE LOOSER THE TENSION THE BIGGER THE STITCH AND THE LESS STITCHES AND ROWS ARE NEEDED TO MAKE A CERTAIN WIDTH AND LENGTH.

In our first two tension exercises we use tension to alter the structure pattern of our knit. The contrast between tight and loose tension forms structure pattern. The change of tensions for the first sample is given. The second sample is the student's own experiment. The best results are when the contrast of tension repeats in same sequence.

In our next sample (Tension #2) we use a gradual change of tension to shape a "waistline" effect.

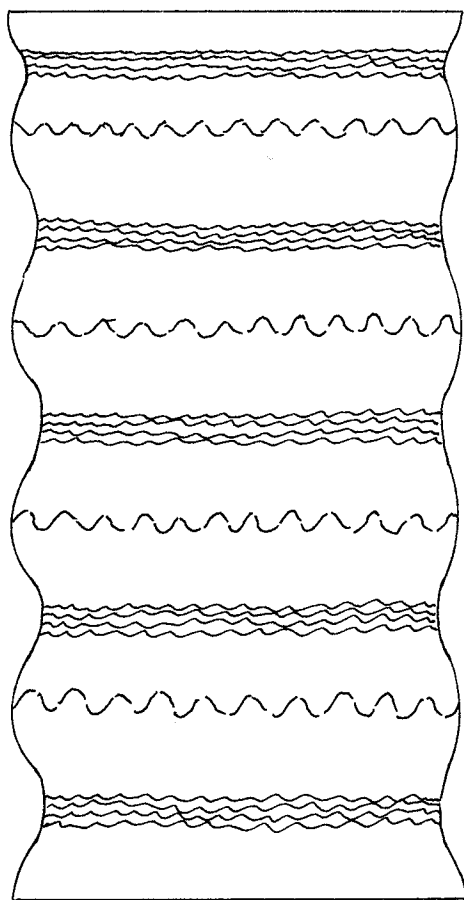
Our 3rd exercise consists of 4 different samples. We practice different ways to finish a neckline which is cut into a knitted swatch and machine overcast.

Neckbands 3 A, B and C are rounded, shaped through tension, with a knitted foldline at the crease. They are sewn on differently and therefore knitted especially to suit the finishing technique to be used for them. But basically they are the same.

Exercise 3 D is only a straight band with a fold, planned for a V-neck finish. It is optional which way it is put on the neckline. The point of the V-shape has to be carefully basted and preferably sewn by machine for most precise results.

TENSION FOR STRUCTURE

Experiment between Tension 10, Tension 7 and Tension 4 for first sample.



Exercise #1A:

Cast on 40 stitches

Knit 20 rows Tension 7

*Knit 1 row Tension 10

Knit 7 rows Tension 7

Knit 1 row Tension 10

Knit 9 rows Tension 7

Knit 4 rows Tension 4

Knit 10 rows Tension 7

Repeat from * several times.

Exercise #1B:

Experiment on your own to create a structure pattern by using different tensions.

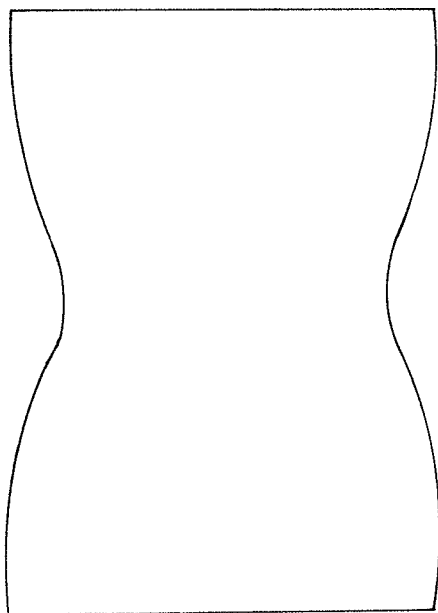
Your biggest contrast is between tension 10 and tension 3 or 4 (It is also possible to use tension 1 or 2, but difficult for beginners). Using tension 10 and 3 alternated, creates the most visible pattern. Use "purl-side" up for better contrast.

TENSION FOR SHAPING

Use tension to form "Waist-line"

This decreases and increases width.

Exercise #2. Cast on 40 stitches and knit.



20 rows on Tension 8

(if your regular tension is 8)

8 rows on Tension 7

6 rows on Tension 6

6 rows on Tension 5

10 rows on Tension 4

6 rows on Tension 5

6 rows on Tension 6

8 rows on Tension 7

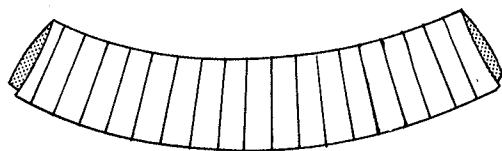
20 rows on Tension 8

Cast off and steam.

TENSION FOR NECKBANDS

Shaped or Straight Double Band with Fold:

Exercise 3A: Cast on 65 stitches. (for real neck finish it has to be in proportion to neckline).



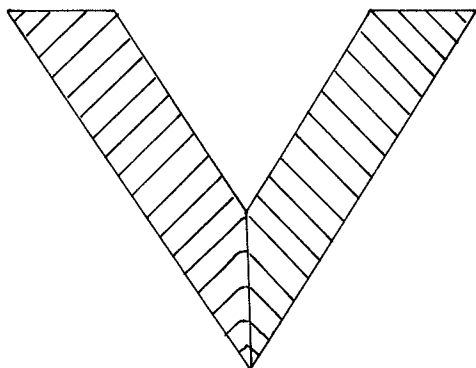
Knit 4 rows on Tension 9 (outer tension)

Knit 2 rows on Tension 8

Knit 2 rows on Tension 7

Knit 2 rows on Tension 4

Knit 2 rows on Tension 2 (inner tension)



Knit 1 row on Tension 10 (fold line)

Knit 1 row on Tension 2 (inner tension)

Knit 2 rows on Tension 3

Knit 2 rows on Tension 4

Knit 2 rows on Tension 7

Knit 2 rows on Tension 8

Knit 4 rows on Tension 9

Cast off as loosely as possible!

Exercise 3B: Same as 3A, but add 2 rows to the beginning on Tension 9, for a little seam allowance. Cast off.

Exercise 3C: Same as 3A, but add 2 rows to the outer tension at the end and take off on contrast.

Exercise 3D: Make up a straight band with only a fold line for a V-neck band, over approximately 150 needles.

Knit straight pieces approximately 60 st x 60 rows for round necks and 1 piece approx. 40 st x 80 rows for V-neck. Necklines will be cut and overcast by machine and bands stitched on according to separate instructions.

THE FINISH OF THE NECKLINE WITH A DOUBLE BAND

1. Knit double band as indicated on our sheet Sample 3A. Baste underside close to cut edge (stretching the outside of band a bit) and zig-zag it flat on top. Turn in fold line and hand stitch to right side, stitch by stitch.
2. Knit double band as indicated in Sample 3B. Baste top side first, band to outside with seam allowance, machine stitch, turn and hand stitch back side.
3. Knit double band as indicated in Sample 3C. Finish by grafting open stitches to outside of neckline according to extra instructions for special grafting stitch. Slip stitch inside.
4. Knit a straight band with only a fold line to finish V-neck. Calculate yourself the width and length of band, considering which way you want to put the band on. Baste, sew, overcast and cut V-shape. Press seam flat.
5. If a loose turtleneck is wanted, one has to knit a straight piece, double length, because it has to be folded. Calculate carefully, because it has to go over your head. Match neckline to turtleneck. Graft turtleneck together at side seams.

For Grafting, see page 26 and page 85.

HEMS AND WELTS

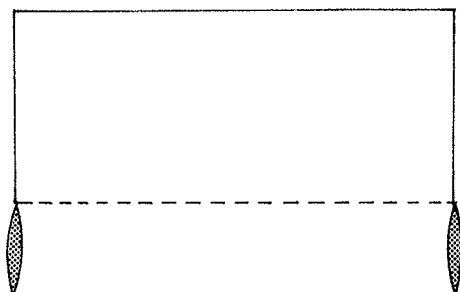
Now we learn how to start with a knitted hem or double welt, to make a good bottom edge or casing. These are useful for a lot of things, but, strange as it may sound, the only thing I do not want you to use a knitted hem for is the bottom of your skirts or dresses, because I want you to be able to adjust the hem later on, while finishing the garment. This is done by sewing it with fine yarn with cross stitches, 1 cm below the hem edge, as you learn in clothing construction. The KNITTED HEM shows quite a ridge line which I do not like for boutique finished garments, though the method is ideal for all types of casings, for drawstrings or elastic. (Exercise #1).

The mock rib double welt (Exercise #2) is a good substitute for real ribs, which we can only knit with a double bed machine. It is formed by leaving every other needle (or every 3rd, or even every 4th needle) in A-position. That creates a little float between the stitches, which substitutes the rib (formed otherwise by the change of knit and purl stitches). The mock rib welt has to be doubled, otherwise it would roll.

Our exercise #3 is a hem with a little picot edge, which can be used by itself. On our sample however I continued the method of transferring stitches, to create an eyelet pattern in the knit.

SMALL HEM WITH FOLDLINE

Simple way with closed cast-on.



Exercise #1:

Cast on 40 stitches.

Knit 8 rows on Tension 7.

Knit 1 row on Tension 10 (for fold).

Knit 9 rows on Tension 7.

The inside facing of the hem is one row shorter on purpose, to make a flatter fit.

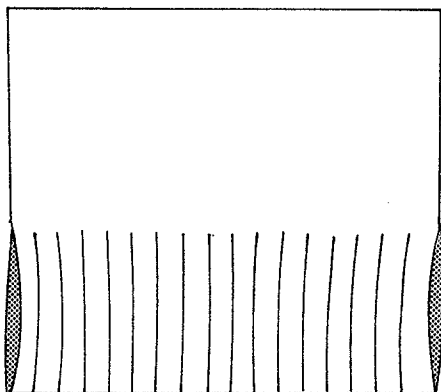
Hang "CAST-ON-LOOPS" on to machine, folding the hem up, needle by needle. Make sure to catch every loop, otherwise it pulls the hem to bias. Take only the back loops of the cast-on, and leave the loops in front of the latch in the needle hooks, till the whole row is done. It is easier to adjust, if necessary, in this position. Then push all needles into D-position. Every needle has 2 loops. Put front lever to 2 and knit 20 to 30 rows over it. Cast off and steam.

Later on we learn an open cast-on, where the open stitches are hung to the machine. This method is a bit more elastic, but I feel, in most cases it is not important to go to more complication. I myself use, except for special occasions, the closed cast-on for my hems or casings.

THE ONE-BY-ONE "MOCK-RIB" DOUBLE WELT

Worked with closed "cast-on".

Later one can use the "open cast-on", if one prefers.



Exercise #2.

Cast on 26 st. on every other needle.

Use the needle pusher to bring the alternated needles into D-position.

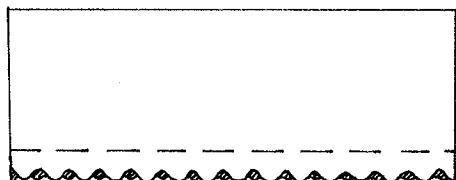
Put tension dial to 3 and knit 50 rows. This is double the length of your mock rib welt.

Hang "cast-on-loops" on to the EMPTY needles in A-position and pull them at the same time to B-position (which is the regular working position). Take only the back part of the cast-on-loops. After the whole row is done, push all needles into D-position, using the straight side of the needle pusher. Put tension dial to 7 or 8, (your regular tension) and knit another 20 to 30 rows over all needles. Cast off.

To block the "rib", insert a straight piece of metal or a non-melting ruler into the double welt, stretch it lengthwise and steam gently. The mock rib pulls in the width, and makes quite a good substitute for a real knit 1 purl 1 rib.

Mock rib double welts can also be done 2 by 1 or even 3 by 1. That means 2 or 3 needles in working position and 1 needle in A-position. Exercises are optional. Try on your own.

HEM WITH PICOT EDGE AND EYELET EFFECT



Exercise #3.

Cast on 41 stitches. Knit 6 rows.

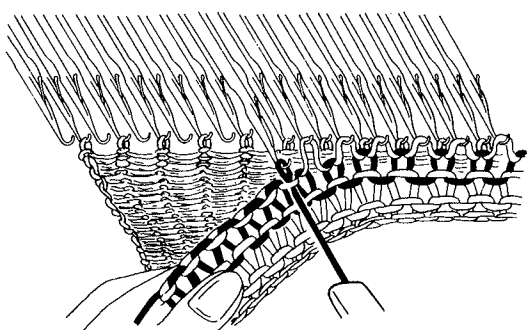
(Tension 7, or suited to yarn)

Take transfer-tool and transfer every other stitch to the neighbouring needle, starting with the 2nd stitch. Leave stitches in the needle hooks. The empty needles slip back to A-position and the B-position needles have 2 stitches each in their hooks. After the whole row is transferred, pull all empty needles from A-position back to B-position. All needles are again in one line, which is the working position. The empty needles will form a new stitch, leaving a little hole below them. Knit 6 rows. Hang "cast-on-loops" onto machine, as we have learned, folding the little hem up. Push all needles into D-position, (this is more secure, than leaving them in B-position, which you most likely will be able to do later on). Knit 10 rows. Repeat the transfer-row and knit another 10 rows. Repeat transfer-row, knit 2 rows over it and transfer again, but alternated. (Start with 3rd stitch, the stitch on the needle above the solid group is transferred to the needle above the hole, which alternates the holes.) Knit 10 rows. Transfer again, knit back and forth with a contrast colour. Transfer alternated. Continue knitting with main colour for 6 rows and repeat the little zig-zag stripe. Knit 10 rows and cast off.

THE OPEN CAST-ON

Mock Rib Welt with "Open" Cast-on

Bring the total required amount of needles to B-position. Take the 1x1 needle pusher and push every other needle back into A-position. Knit 6-10 rows on contrast yarn, tension 3-4. Knit 1 row with the ravel cord on tension 7 or 8, preferably from left to right. Put tension dial back to 3 or 4. Start your mock-rib with main yarn and knit double the number of rows for your wanted length of rib (60-80 rows). Fold hem up and pick up the main yarn loops between the ravel cord. Put



them on to empty needles, one by one, by pulling them at the same time to B-position. Set tension dial to 7 (or your required tension) and knit carefully over all needles, holding the knit down with your finger. For more security

one can push all needles to D-position. The stitches then are behind the latches, close to the sinkers and one knits them easily back to B-position with front levers at II. Continue knitting your sample or garment piece. After a few rows, one can pull out the ravel cord to the shorter side and the waste yarn will fall off.

When the piece is finished and off the machine, insert a ruler into the double welt and stretch it lengthwise to desired shape. Steam gently.

Mock ribbing of 2x1 or 3x1 is done the same way.

Open Cast-on for Starting a Fabric with Open Stitches:

To be grafted later on. Cast on the required amount of stitches with waste yarn. Knit 5 rows. (Carriage is at left). Knit O N E row only with the ravel cord, or with another contrasting colour. Then start the regular fabric. The ravel cord, or the contrasting yarn is pulled out later on, and leaves the row of stitches open to be grafted.

notes

KNIT, CUT AND SEW

So far we have learned simply to knit by moving the threaded carriage back and forth. We have learned and experimented with tension and seen its relation to the dimension of our knit. We also have learned to form a hem or a double mock rib welt.

We are now ready to knit the pieces for our first "cut and sew" sweater. I feel that it is very important at this stage to knit a big simple piece, in order to develop an even and balanced gentle movement for pushing the carriage back and forth. Every uneven stroke or jerk causes trouble and makes the carriage skip needles and lose stitches.

This even pull can only be developed by practising, and the best way to do that is to knit a large straight piece.

KNIT, CUT AND SEW A SWEATER

1. Take your knit-sloper or standard size sweater pattern.
2. Knit straight single pieces of "approximate size" (calculate width and length with your gauge) for front, back and sleeves. One can start each piece with a knitted hem or a mock-rib welt. Leave hem or welt with 3-4 stitches unattached each side for seam allowance.
3. Draw centerline in pattern. Baste centerline in knitted pieces with contrast yarn, exactly in the center of the vertical stitchline.
4. Baste around outline of pattern with contrast thread, matching center lines of pattern and knit.
5. Draw horizontal lines on all strategic points on pattern. Baste same on knitted pieces, following the exact row of stitches.
6. Count stitches (horizontal lines) and rows (vertical centerline) and transmit the number of stitches and rows to the paper pattern.
7. Sew around all open edges with an overcast stitch approx. 1½ cm (or whatever seam allowance is wanted) outside of basted line.

DO NOT CUT YET!

8. Put knit piece on to a blocking board and align again with paper pattern. Remember, knit is very easily pulled out of shape, or pulled to bias.
9. Steam all borders, which might have been pulled out while overcasting them and let them rest on the board or flat

Knit, Cut and Sew a Sweater (continued)

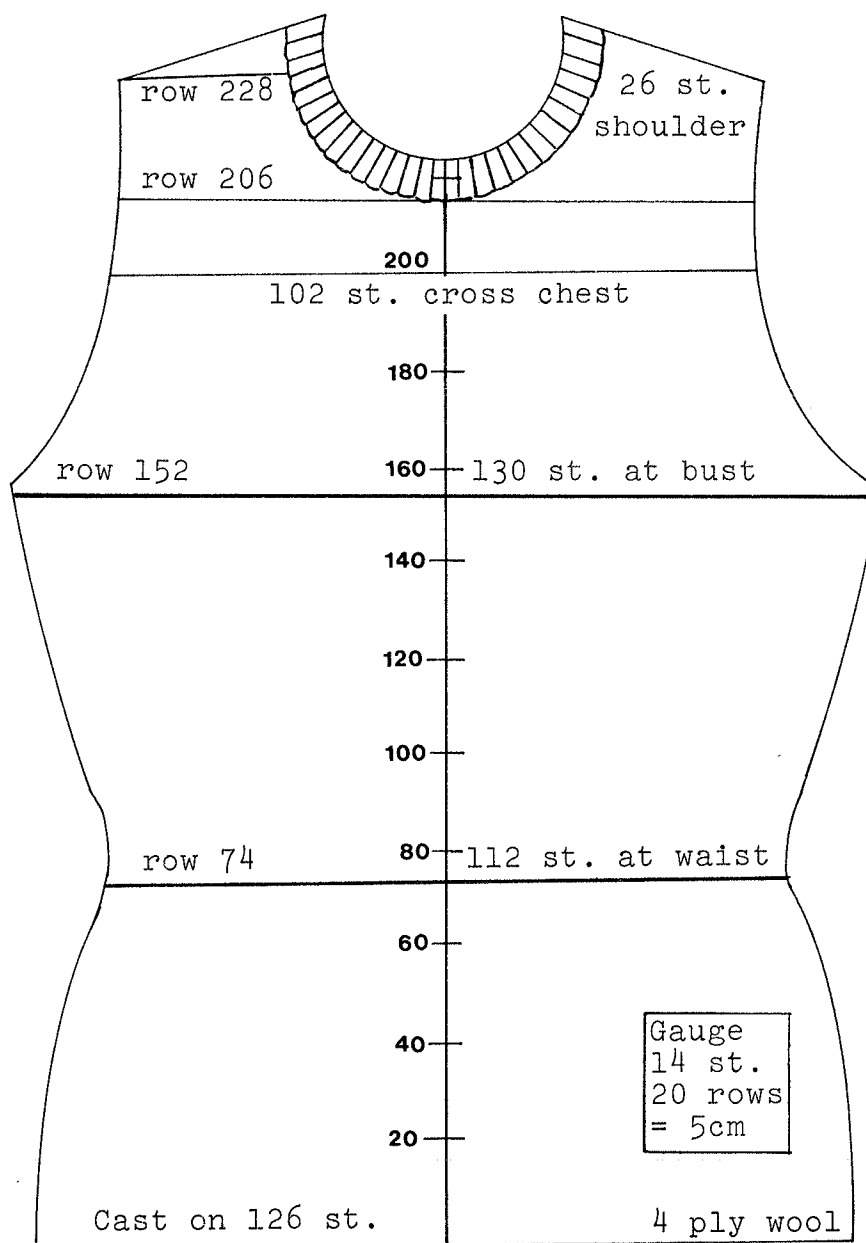
9. (continued)

surface until completely dry. Use special care.

10. Now cut close to overcast and steam edges flat again.
11. Sew pieces together by hand or machine.
12. If you have a neck piece shaped by tension for round neck, or straight for V-neck, put it to right side. Make opening big enough to slip over your head, or plan for shoulder opening. Make sure that same amount of stitches is on each side of the neckband between center and shoulder seam. Baste.
13. Sew neckband either by hand, going through each stitch at the outside and slipstitching the inner part in place, or, sew neckband on by machine like a T-shirt finish. Insert small elastic if necessary.

Later on we learn more sophisticated ways to finish the neckline.
14. Put type of wool, tension and gauge used on every paper pattern piece. It saves you a lot of time later on.
15. Instead of overcasting the knit, before cutting out the pattern, one can serge around the pattern edges if a serger is available. Stretching must be avoided! "Boutique Finish" will still have pressed open seams.

Knit, Cut and Sew (continued)



Knit sloper with counted stitches and rows

Guideline to Construct and calculate

PATTERN FOR KNITS

- 1.) The difference: between a sloper used for knit fabric and a sloper used for woven material is the elimination of darts. Seam allowances are not generally necessary because of the stretch.
- 2.) The stretch: differs in each knit, according to yarn, tension and knitting technique used. There is no set formula, a trial sample for each yarn, each pattern technique is necessary. Commercial knit patterns have a little scale indicating "how much stretch" the pattern was made for.
- 3.) The shape: each designer or company uses a sloper (or block), most adaptable to their particular style of knit wear. They all vary a bit, within the guidelines. Sheridan College has developed their own sloper for the purpose of the knit design students.
- 4.) Ribbed bands: used for the purpose of holding garments close to the body, hem, cuffs, neckbands, etc. must have enough retension to pull over the body, but must also fit tight when in place. To calculate the necessary stitches for the rib, we take the width above the rib, as for the main garment. Automatically the rib will pull in the fabric.

The "True Rib" is only achieved by a Double bed machine, where we can change between knit and purl stitches. While working on the Single bed machine, we have to use the "Mock Rib" technique (page 16 & 18) which is not quite as elastic.

- 5.) Pattern for total rib garments: can have many different effects by varying the stretch. A tight rib clings to the body and accents the figure contour very much, while a rib with little or no stretch can give the same effect as a pleat. A rib fabric stretched to capacity gives a vertical stripe pattern.

The calculation for a rib garment therefore, is more difficult. Again, we have to consider the yarn also. In general, wool has the best retension, synthetics, cottons & linens very often have less. I advise "for the try out" to knit a large piece (the whole width of the machine by the length of the pattern), using the same yarn and tension as planned for the garment. Then, take your dress form and drape to get the desired effect, using the piece later to "Cut & Sew" as the back-part of your garment. On the basis of this drape, you can calculate the other parts.

NO KNOTS!

Never make a knot in your thread or wool when you start sewing your sweater by hand.

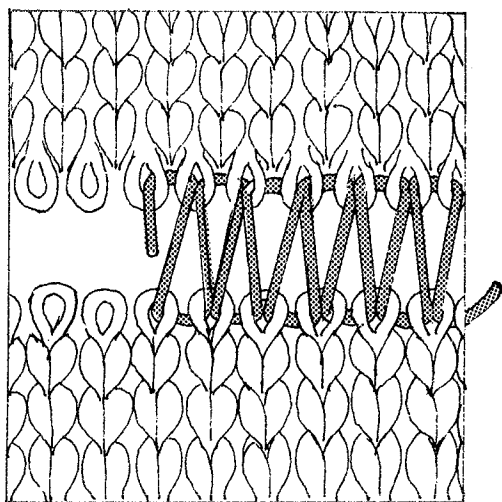
Knots in wool are not only bulky, they also get looser in the course of time and make an ugly display in your seam.

So, whenever you are sewing by hand: N O K N O T S !

Fasten your yarn by going along your edge for a few stitches, then, make a backstitch, come out at your starting point, catching, or better, splitting your thread. Pull tight, and your sewing thread is secured. One can even repeat this procedure for a second time.

notes

HORIZONTAL GRAFTING



Grafting is a method of joining two parts of knit as invisibly as possible. A horizontal graft GRAFTS a row of open stitches to another row of open stitches, recreating a new row between them. If it is done well, it IS invisible. All we need is a blunt wool needle. We graft with the same yarn we knitted with.

Take thread at least 3 times as long as the row to be grafted; it is very troublesome if one has to change the thread in the middle of a row.

Now the technique: (We graft knit side to knit side). Go into the first open loop, at the bottom side, from underneath. Go into the corresponding top loop, from outside to inside and come back out in the next loop of the same row. Go back into the bottom loop we started with, from outside to inside, and come out again in the next loop of the same bottom row. Repeat.

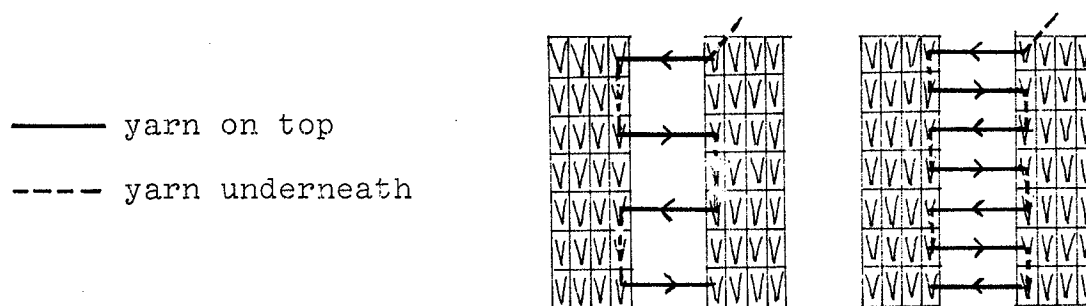
The tension of the thread, which forms the new stitch, is very important. If the tension (the way you pull your thread) is too tight, the new row will pull. If the tension is too loose, the stitches of your new row will be too big, and will make a loose line, which is very visible.

Grafting open stitches to overlap fabric: How to graft one row of open stitches to overlap a finished seamline, as for instance a separate neckband, a yoke, or a "straight set-in" sleeve, is explained on page 85.

VERTICAL GRAFTING

The vertical graft joins two knitted pieces together in vertical direction. This will leave a slight ridge in a plain knit, no matter how well one grafts. But in a knit-in pattern it becomes nearly invisible.

The technique itself: one practically draws half a stitch of the left side to half a stitch of the right side. One has to pull tight in order to make a whole stitch out of the two parts. It is best to work from the top down.



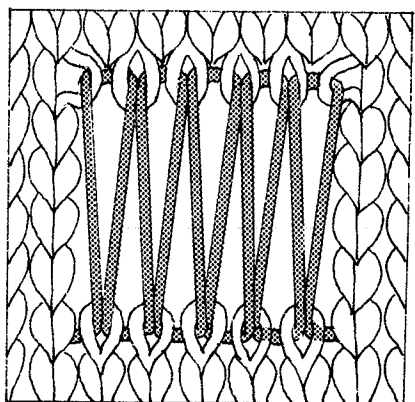
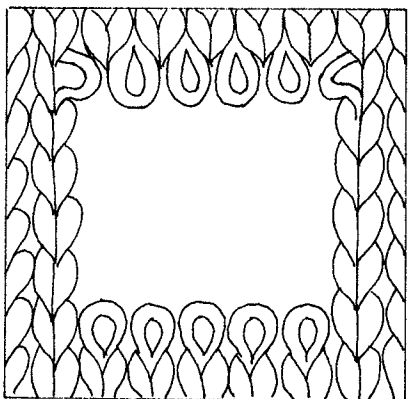
One can use a "long stitch" vertically over 2 rows, which I prefer, in case I have to do a long seam. Or one can use a short stitch vertically going into every row. This will be used in loose knits or in short distances.

If one has horizontal stripes, a border or an all-over design, one has to be extremely careful to follow the pattern. But even on plain graft one has to watch to take the same amount of stitches on both sides, in order not to end at the bottom with one side longer than the other. I pin my seam every once in a while.

It is also very important NOT to take the end stitch, which is usually irregular, but to go one stitch at least inwards, which one has to account for if one calculates to match a design. The perfect match is NOT the end stitch on each side, but 1 or 2 stitches inward.

The vertical graft gives a little seam allowance inside, which will be steamed flat. If mock rib double-welts are grafted, one has to work first the top part of the welt, then the inside, both separate.

TO REPAIR A HOLE IN A SWEATER KNIT



First pull the damaged yarn sideways, to each side of the hole, to lay open all the loops of the first undamaged top and bottom row. Then pull the remaining threads sideways, to get an open square, bordered by the last undamaged vertical stitch row on each side. Pull all threads to the wrong side, so that the hole looks like a perfect square. Baste a piece of cardboard under the hole. Take a well twisted cotton or yarn and put vertical spans in, starting at the right bottom corner, coming out in the first open loop and joining the top and bottom loops stitch by stitch in a large "knit-stitch", as for grafting.

Now comes the actual repair, which should be done in the sweater material. We start also in the right bottom corner 2 st. right of the open loops, with a horizontal row of grafting stitches around the span stitches. We end 2 st. left of the hole. Put in row by row, the same way, till one can join the top row of the open stitches. Try to get all the new repair stitches matching in size and tension.

Fasten all loose ends at wrong side. One can take the "span-stitches", which have been only a help, out again, to make the repair knit more elastic.

Steam from both sides.

notes

STRIPES

One of the easiest patterns to achieve in Knit is a horizontal stripe. One simply changes the yarn in feeder 1, according to wanted width of stripe. It is most practical to always knit an even number of rows, so that one has the ends all on one side and can repeat a colour without breaking the thread.

1. How to start a new colour (should be demonstrated).
2. How to put yarn (unthreaded) behind the machine completely out of the way, for repeating stripe pattern.
3. How to use 2 antennas. Knit stripe pattern with 4 colours and keep the 3 unused colours behind machine.
4. How not to tangle the wools. Colour in feeder should always be on top of the other 3, in order not to hamper the flow of the thread.
5. While changing colour, one should always knit the first stitch in by hand, before starting the new row, in order not to pull the wool out of the preceding rows.

Stripes (continued)

6. If one knits multicoloured striped with only one antenna, one can leave the different balls of wool on the floor, feed them only through the feeder and hold the tension by hand. It is easier to do that standing up, and it needs some skill. Beginners should unthread and rethread properly.
7. Start sample with row of holes every 3rd stitch and put a fringe in.
8. How to match stripes for yokes, sleeves, etc. see page 32. This is very important if you want to knit your first sweater in stripes.

SMALL MULTICOLOURED STRIPES WITH FRINGE**Exercise:**

Cast on 40 stitches. Knit back and forth. Transfer every 3rd stitch to neighbouring needle to create little holes to put the fringe in later on (see eyelet sample, page 19). Knit over it a few rows with main colour.

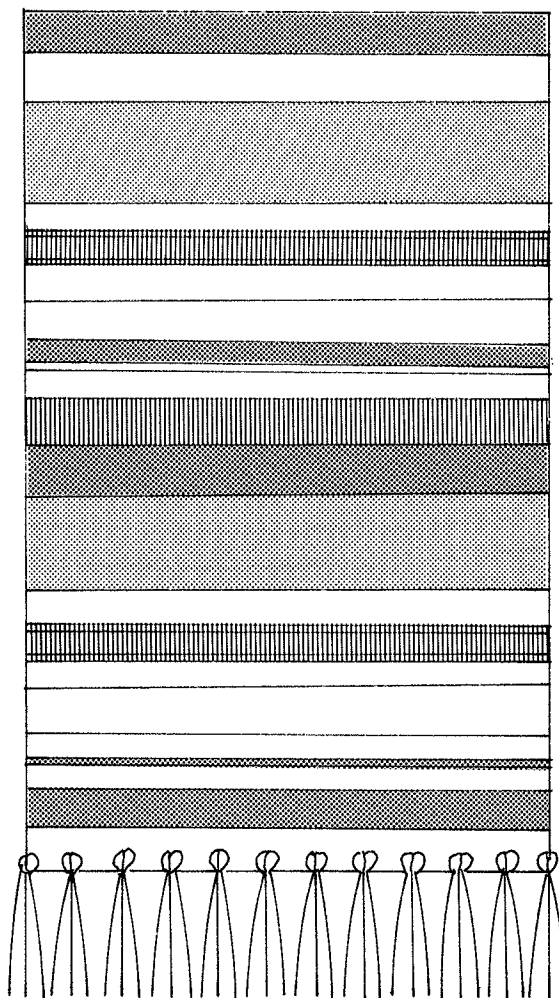
Leave all your contrast colours on the floor and apply tension by hand. Hold yarn straight up. One can also just hook the yarn over the tension spiral, but it still should be held by hand. (Naturally, one can thread and unthread the whole machine each time one changes colour).

(continued next page)

Exercise continued.

Knit your own combination of multicoloured stripes for about 60 to 100 rows.

Make sure you always fasten the new stripe colour by knitting it into the first stitch by hand. It does not matter that the border stitch has an "extra" stitch each time one changes colour. If we have a wider stripe of one colour, it is advisable to knit the unused contrast colours into the border stitch once in a while in order to prevent big loops at the side, (one should do that approximately every 6th row).

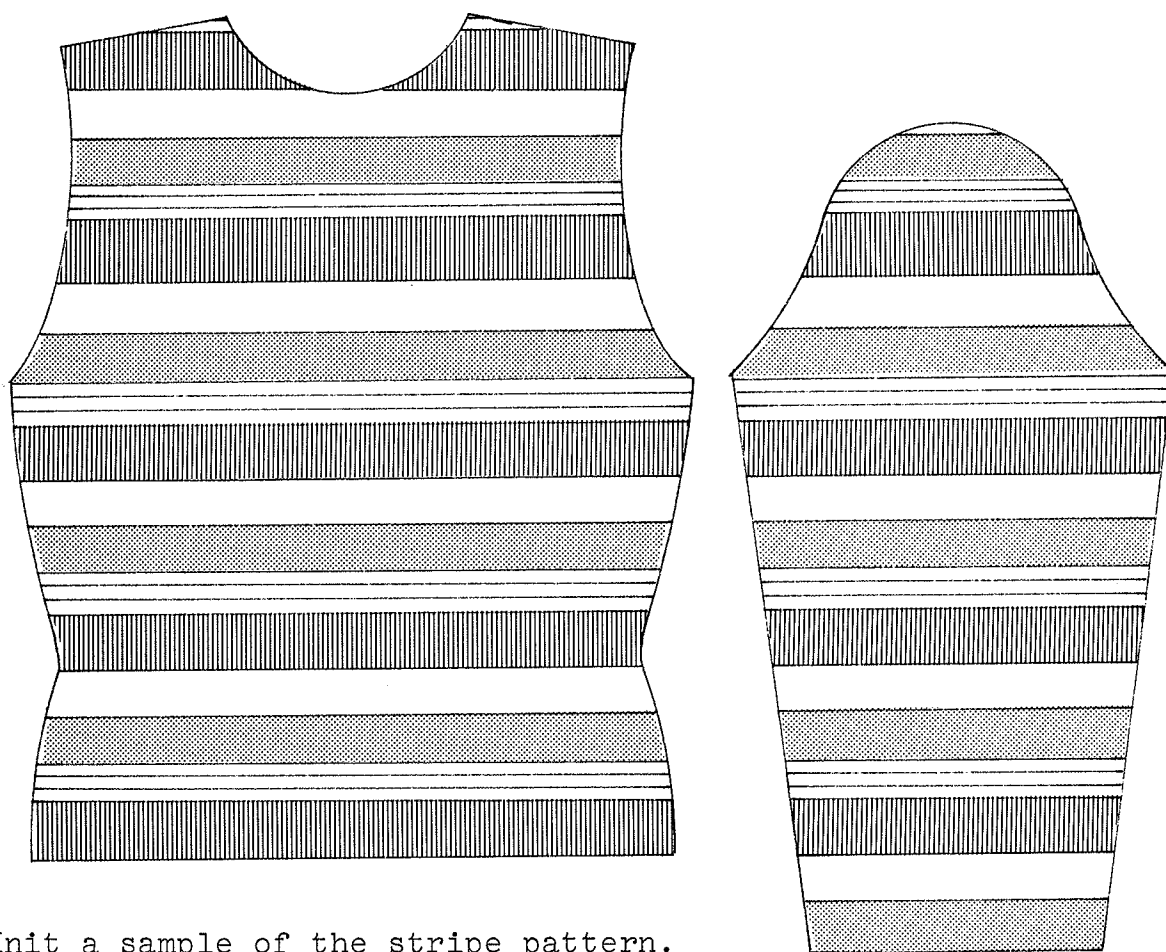


For the fringe, cut bunches of wool 3, 4 or 6 ply, depending on how thick you want the fringe. Cut pieces about 20-25 cm long. (One can, of course, make them any desired length.)

Now fold the wool bunches in half and loop them into the provided holes with a crochet hook, pulling the ends through the loops.

HOW TO MATCH STRIPES AND BORDERS

How to match Stripes and Borders on Sweater and Sleeve



Knit a sample of the stripe pattern.

Transfer distance and repeat of stripe to paper pattern. Draw a line from the armhole point to armhole point on both sweater and sleeve. THERE IS YOUR MATCH! NOT at the bottom!!! Work stripe pattern down and up from this line. Add what is necessary to the stripe-repeat of the sleeve and start there with knitting. This way you match the sleeve where it is most important. Always align at armhole. Never start sleeve exactly at sweater bottom unless it has by chance the same length.

KNIT A CORD

Remember the yards and yards of cord you made through an empty thread spool once upon a time in Kindergarten? We can do exactly the same on our knitting machine. It is very handy to know, because we can make many different uses of matching cord: all kinds of ties, looping it around edges, braiding or macrameing belts, etc., etc.

CARRIAGE SETTING

Tension Dial preferably on 5 (but it depends on yarn, and has to be tried out).

Right side lever to Front: 

Left side lever to Back: 

Cam lever to slip

Right front lever to I

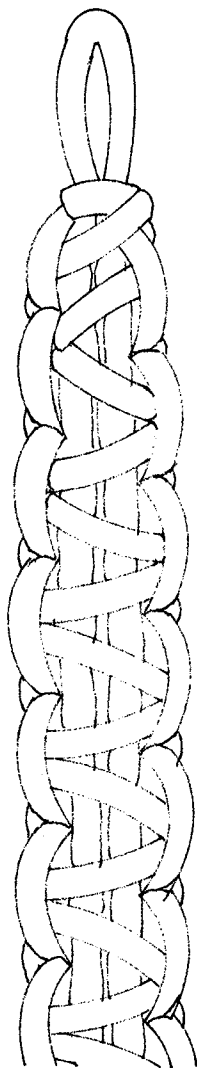
Left front lever to II

Cast on 4 center needles (2 each side of 0). Knit, pulling lightly on cord. The idea is, that one row knits, the other row "slips", which brings the end stitch of one row to the beginning of the next row, which closes the 4 stitches to a little tube. One can also try to knit the cord over only 3 stitches for a very fine cord, or over 5 stitches for a bigger cord. More than 5 does not work any more. The cord does not close then.

MACRAMÉ A BELT

EXERCISE: Knit a Cord and

Macrame a belt in Square Knots.

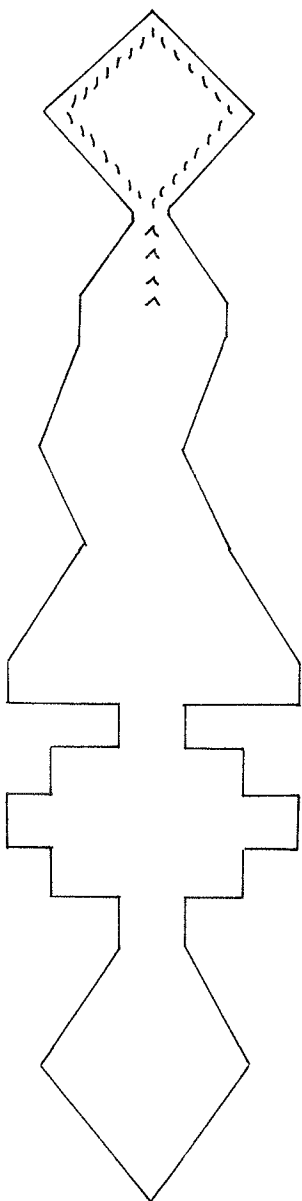


The 2 inner cords should be the length of the belt.

The 2 outer cords, which are the Macrame weaving ropes, should be 4 times the length of the finished belt, plus ties if wanted for closing the belt.

For the exercise it is only necessary to knit and macrame a sample of approximately 20 cm.

INCREASE AND DECREASE



This sample is a combination of 9 different exercises for different ways to increase and decrease 1 stitch at a time or several stitches at once; at the outer edge of our sample, or "fully-fashioned", some stitches inside the fabric. It is all done in one shaped piece. #1. We increase 1 stitch at a time, by simply pulling a new needle into working position, at the outer edge, opposite the carriage side. The machine always forms a new stitch loop, if we have only O N E empty needle. (Page 38). If we have several empty needles beside each other or want to increase more than one stitch at a time, one has to use method #3.

Later on, when you are more advanced, if you have to increase 1 stitch at either side of your knit, you can pull both outer needles out at the same time and then knit back and forth over them. It goes much faster, but the edge on the carriage side is not as firm as the one opposite the carriage.

most of the time your seam allowance, it does not really matter, but for this sample, I want you to learn it the "proper way".

#2 is the reverse, we decrease 1 st. at a time. (Page 38).

#3 deals with increasing several stitches at the same side, at the same time. The method of winding loops on to the needles instead of crocheting them on is also another method of "casting on". Some people even like it better. To me it is fine and practical to wind on a limited amount of stitches, it makes an

Increase and decrease, continued

even thinner edge, but casting on over all needles by winding simply does not work for me. Try for yourself. (page 38)

#4 is the reverse. We cast off the wanted amount of stitches at each side, in 2 operations, to correspond with the increase. Then cast on again all at once, to get the needed amount of stitches for the next exercise. (Page 39)

#5. If we have to decrease 2 stitches at the same side, at the same time, we can do it in one operation, instead of casting off 1 stitch twice. We just transfer the second stitch immediately together with the first stitch, without taking the transfer tool out of the stitches. (Page 39)

#6. We knit a bias by increasing on one side and decreasing on the other side. It works both ways. (Page 39)

#7. We now decrease in the middle of the fabric by knitting 3 stitches to 1 stitch, thus decreasing 2 stitches at the same time. This is a very important way to decrease inside the fabric, for darts or to reduce width for all kinds of purposes, e.g. A-line skirts. (Page 40)

#8 and #9. At last we are exercising a "fully-fashioned" increase and decrease, which occurs 2 or 3 stitches inwards from the outer edge. The border stitches form a straight line and even edge. This method is very important for grafted seams, all kinds of hand finishings or any type of knit where even side edges are necessary. (Page 40).

Increase and Decrease, continued

All 9 samples of the exercise have taught methods to shape the outer form of our knit. But we still have to learn one more different form of increasing width, which is very important for today's fashion. That is a method to increase the width not at the outside shape, but within the fabric. It is especially used for "blouson type" garments (Exercise #10).

#10.

The principle is to take the whole knit off the machine on contrast yarn and put it back, leaving a calculated number of needles empty, spaced evenly, thus spreading the width of the knit from within. (Page 41)

The empty needles will be filled with a new stitch as we will learn in exercise #8, page 40, of the Increase-Decrease assignment, by putting the horizontal bar below the neighbouring stitch of the preceding row, on to the empty needle. If we simply put the empty needle back to B-position, it would also form a new stitch, but it will leave a hole underneath, as we have seen in our eyelet exercise, page 19.

In most cases, that is not wanted!

EXERCISE FOR INCREASE AND DECREASE

1. Cast on 3 stitches. Knit back and forth.

* Pull 1 needle out at left, knit to the left.

Pull 1 needle out at right, knit to the right.

Repeat from * until you have 35 stitches.

Knit 4 rows straight, carriage is at right.

2. * Transfer left outer stitch to next inner needle.

Knit to left. Transfer right last stitch to next inner needle, knit to right. Repeat from * until you have 7 stitches left. Carriage is at right.

We have increased and decreased ONE stitch at a time on the outer edge.

3. * Pull 7 new needles at right into C-position and wind the yarn anti-clockwise around the needles, behind the latch. Knit to the left. Pull 7 new needles at left side and wind yarn clockwise around those needles. Knit to the right and continue knitting straight for 12 rows. Carriage is at right. Repeat from *. We have 35 st. on our sample.

Exercise for Increase and Decrease, continued

4. We have increased several stitches at the same time at the outer edge. We now want to decrease several stitches at the same time. We just cast the wanted amount of stitches off (7 in our case) and hand the last cast-off loop to the first working needle. Knit 12 rows and repeat. We have 7 stitches. Knit 12 rows; increase 14 stitches each side at once. Knit 12 rows. We have 35 st. again.
5. We now decrease 2 st. at the same time on the outer edge.
* Transfer the outer stitch to the inner needle and immediately transfer both stitches to the next inner needle together. Do that on both sides in the same row, then knit back and forth over it. Repeat * until you have 15 st. left. Knit 10 rows.
6. Now, *pull a new needle out at left side. Knit to the left, transfer right outer stitch to inner needle. Knit to the right and repeat from * 5 more times. Knit one more time back and forth over all 15 stitches, then reverse: transfer the last outer stitch at left to the next inner needle and knit to the left. Pull one needle out at right outer edge. Knit to the right. Repeat 5 more times. Knit 10 rows straight over all 15 needles. We have knitted a bias corner.

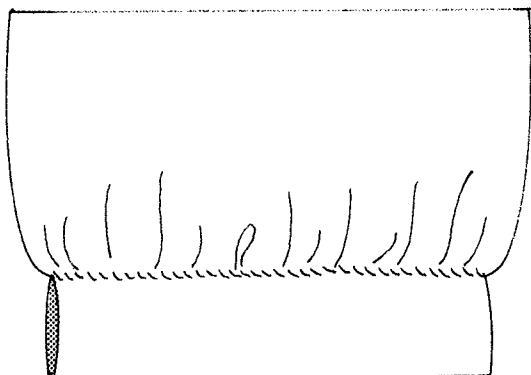
Exercise for Increase and Decrease, continued

7. We are decreasing now in the center of the knit. Transfer stitch 7 from each side to the center needle. We have 3 st. on the center needle, the middle stitch stayed at its place and the 2 side stitches are on top of it. 2 empty needles on each side. We then move all stitches toward the center by transferring them with the 3-prong transfer tool. We have decreased 2 stitches. Knit 6 rows and repeat the procedure, transferring stitch 6 from each side to the center needle.

Repeat 2 more times until you have 7 st. left. Knit 4 rows.

8. & 9. Take your 2 or 3 prong transfer tool and transfer on both sides the 2 or 3 end stitches, one needle outwards. Pull up the horizontal bar below the neighbouring inner stitch with your single transfer tool and put it on to the empty needle. Knit back and forth and repeat till you have 35 stitches. Knit two more times back and forth over all needles and begin decreasing the same way, 2 or 3 stitches inward. Lift the 2nd or 3rd stitch from the outside edge and transfer it to the neighbouring inner needle. Move the border stitches one needle inwards. Knit back and forth and repeat till all stitches are used up.

INCREASE ACROSS THE FABRIC



Exercise #10: Cast on 21 st. on every other needle. Knit 30 rows on tension 2. Hang cast-on-loops to the empty needles. by pulling them at the same time out to D-position. This will close the casing or little welt.

Change to tension 7 and knit back and forth over all 41 needles. Mark center stitch. Take off on contrast yarn. Put center stitch back to center needle. Put next 2 stitches at either side of center to their corresponding needles. We have 5 stitches on our machine, in the middle of our center.

*Leave one needle empty on either side and put the next 5 stitches back to their needles. We have 3 groups of 5 stitches on the machine, with an empty needle between them. Repeat from * till all stitches are back on the machine. We have 8 empty needles. Pull 1 more needle out to work at each side. Now take your transfer tool and go into the horizontal bar below the needle neighbouring each empty needle, and put that bar as a stitch on to the empty needle. We gained a total of 10 stitches spread evenly across. For safety reasons, pull all needles carefully to D-position, because the fabric is very stretched, and some of the needles might skip otherwise. From D-position, they usually knit safely back to working position. But check that all stitches are caught. Knit 40 rows, cast off. Block casing by putting ruler into the little welt and stretch it to vertical. Then block the rest of the fabric, holding the casing tight and stretching the other part of the knit. For cuff casing, see also page 251, #6.

KNIT-IN OR FAIR ISLE

The "knit-in" patterns are one of the greatest challenges to your creativity. The basic technique is to knit with two different colours at the same time, putting them in two different feeders, knitting the needles selected for the design in the ornament colour and the rest in the main colour. Before we can go into the designing part, we must master the technique as such.

We experiment in the first lesson with some given commercial cards, to practise the technique and find out how it works. On the first exercise, everything is given. On the second exercise, you select your cards and play around with them by blocking and releasing them, which will change the design, and create new effects.

Here are my teaching points:

1. The relation between carriage and pattern panel:

The side levers pointing to back position () connect the carriage with the pattern panel. If the side levers point to the front () carriage and pattern panel are interrupted and NO pattern will knit. Front levers do not matter for 2 colour "knit-in".

2. To set up the machine for 2 colour pattern knit:

Dial on "knit-in". Main colour in feeder I, contrast colour in feeder II. (left of the gate pin!)

"Knit-in" continued

3. Inserting the card:

Roll the card in till the panel shows #1 at the right side. For border design, the card can be used open, for continuous pattern the card has to be closed. The front edge has to overlap the back edge! The first row at the bottom of the pattern card is 5 rows deeper down than the #1 at the side shows, because the card is inserted 5 rows deep. The stop knob is on block (○).

4. The memory brain has to be one row ahead of the knitting. The left memory drum picks up the pattern already for the second row, while we are knitting the first row from right to left. Knitting back from left to right, (row 2) the right memory drum reads the pattern for row 3. Therefore the pattern card has to be blocked at row #1 before we start knitting the first pattern row. It has to be blocked in at least for one row (which can be also a blind row) but can be blocked in for an unlimited amount of rows, while one is knitting stockinette rows. To start the pattern, unblock the card (△). The machine then takes over automatically the pattern process.

5. If we block the card, the card is not rolling and the pattern is not changing. Therefore we get a vertical stripe effect, according to the distribution of the punched holes of that particular row, which is blocked in. Experiment with different cards, block and unblock them. See exercise #1 and 2, page 43.

BASIC KNIT-IN EXERCISE

Exercise #1: Cast on 40 stitches.

Insert card #2, block on ○ (stop knob).

Knit 4 rows with main colour (feeder 1).

Put dial on "Knit-in" or "F", card on △ (stop knob) and feed contrast colour in feeder 2.

Knit 40 rows. Block card, stop knob on ○

Knit 20 rows, release card (stop knob on △) for 4 rows, block for 8 rows (○), release for 4 rows (△), block for 8 rows (○) release for 4 rows (△)

Look at the achieved pattern and experiment on your own for another combination of stop (○) and go (△) with same card.

Put dial back to stockinette, unthread feeder 2 and knit a few rows with main colour. Cast off.

Exercise #2: Experiment yourself with different cards.

Block and release them to create new effects.

DESIGN AND PUNCH A CARD

After we have practised the "knit-in" technique, we are ready to design and punch our first card.

What do we need to design a card? Graph paper, pencil and ruler.
What do we need to punch a card? A blank card and a punch tool.

I show the class both and explain: The card has 24 fields in width and 60 fields in length. That is our repeat.

1. The purpose of the holes: The needles touching the unpunched fields of the card are restricted to B-position and knit the yarn in feeder I. The needles which can penetrate through the holes to C-position knit the yarn fed into feeder II.
2. The center: The red centerline of the punch card corresponds with the center 0 mark of the needle bed. The "so called centre needle" which, as we learned before, should be the needle right of center 0 has to correspond on your card with the field right of the red centerline. If you have a design with 2 center stitches the red line is between the 2 stitches and those 2 stitches correspond to needle 1 on each side of 0. Free ornamental or motif pattern have no definite center.
3. The centered motif and the side connections: Look at page 46, we have a centered design. (the fish at the bottom of the page) We can use the most 22 to 23 stitches of the 24 fields of our punch card for the design, because we need for the repeat some space between the motifs. See page 47 and 48 how the sideways repeat works. The centered motif repeats between the diamonds ($\diamond \dots \diamond$) on our needle bed. See also page 52.
4. The split motif and the side connection: Look at page 46 - 48 and 52 where I explain it thoroughly. The "split motif" knits between the crosses ($\times \dots \times$) on our needle bed.
5. The continuous border design and its side connection: Look at page 46 and 47 how it continuous on your card and shows in your knit. See page 49 for my explanation.
6. The overlapping design: as I demonstrated with the running horse at the bottom of page 52 and 53 is an interesting way to make the motif bigger. I used practically 30 fields in width for one horse.
7. The Length: For the connection of a continuous pattern read the chapter on page 50. You only have to close the card if the pattern repeats in length. If you have several single border designs on the card, the card can stay open and be rolled back and forth.

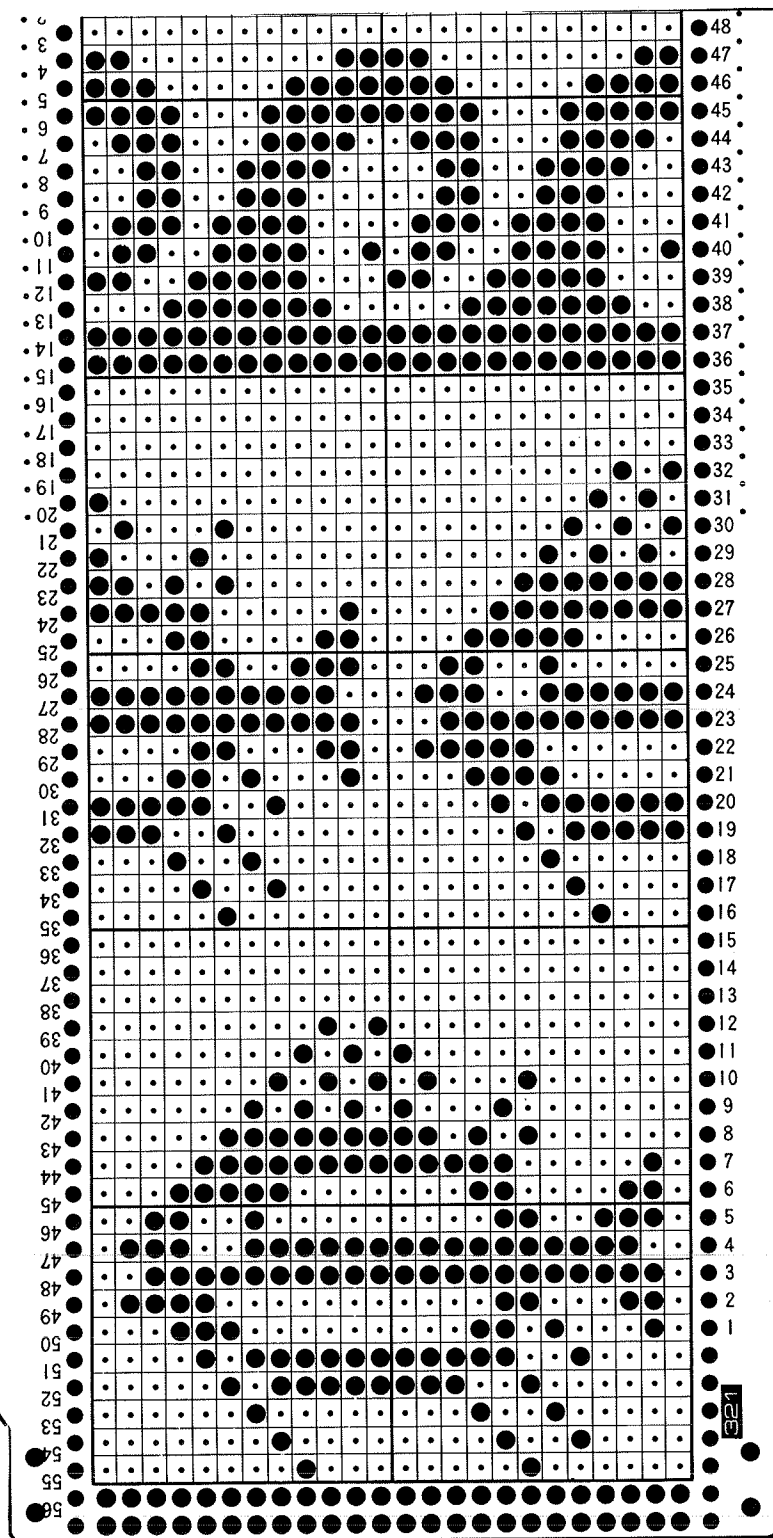
8. The Distortion: of length and width, due to stitch proportion. Remember, our average gauge is 14 stitches and 20 rows to 5 sq. cm. How do we deal with that? We either use a proportional graph paper, which is already printed for our stitch-proportion, or we "stretch" the length proportion of our design, when we are using regular square paper.
9. The repair of a punched error: If we punch a hole in error, we can tape it. I put a small piece of scotch tape over the hole on one side, insert the little punch again and scotch tape the other side too.
10. Single motif: If a single motif instead of a repeating row of motifs is wanted, read page 60 - 65.
11. Vertical stripe designs: Can be obtained by punching only one row in the desired width of the stripes and keep this row blocked. Remember exercise #1 on page 43.
12. Diagonal designs: The necessary connections for a diagonal design are explained on page 56 and 57.

Now, after all those explanations, we take a sheet of graph paper, draw a vertical center line, count 12 fields on either side and draw 2 more vertical lines, which are the outline of the card. We start designing, then punch the card and knit up the design. We do 3 different exercises:

- Excercise #1: Design a small geometrical border. Watch side connections.
- Excercise #2: Design a motif for repeat design. Watch the space between the motifs.
- Excercise #3: Design an allover pattern. Watch side and length connection.

THE PUNCHED CARD WITH FISH MOTIF AND CONTINUOUS WAVE BORDER

Look at it from bottom to top as the card is rolled in.



Continuous border
design with proper
side connection.

Split motif knits
between x----x
and repeats.

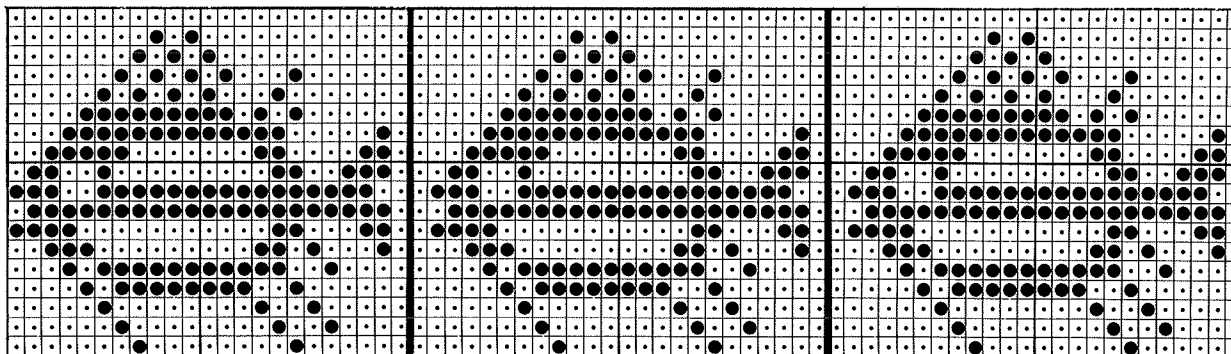
Centered motif
knits between
◇---◇ and repeats.

FISH MOTIF AND WAVE BORDER DESIGN

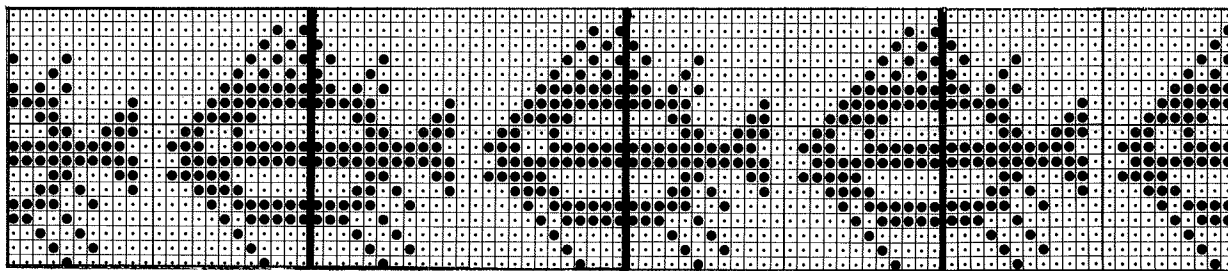
Knitted from the punchcard Page 26

Since we are knitting "Purl-side up", the motifs appear reversed on the "Knit-side"

HOW THE SIDE CONNECTION WORKS

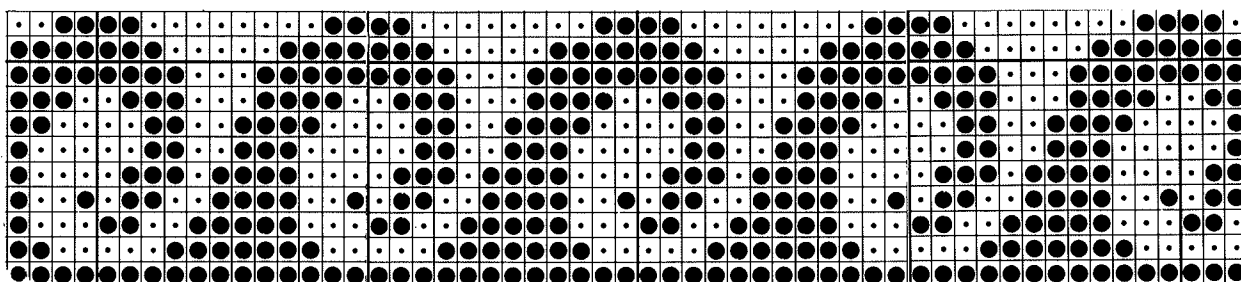


THE CENTERED MOTIF: The only thing to watch for, if we design a centered motif, is the number of fields (or stitches) we can use for it, including the space between the motifs. The Center 0-mark on the machine is also the center of the design.

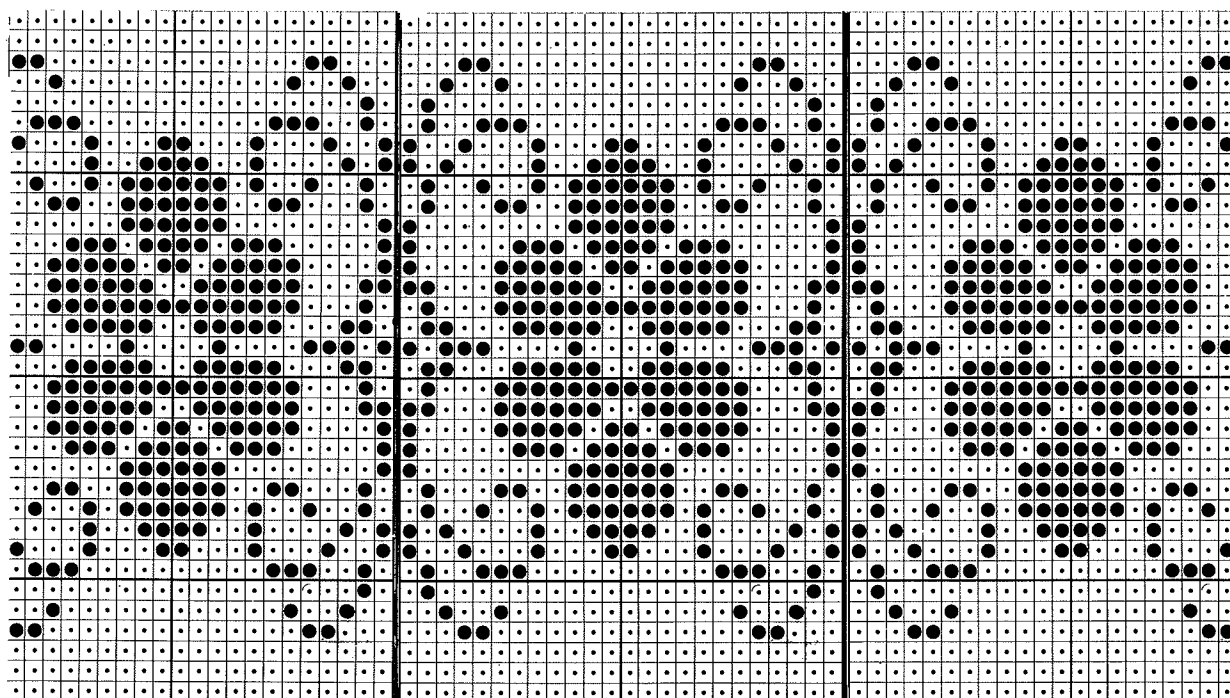


THE "SPLIT" MOTIF: This is an important way to place the motifs differently. The center 0-mark on the machine, which is also the center of our knit is here between 2 motifs. The second row of fish is staggered, as you can see in our knitted sample, page 47 . We literally "split" our fish in half and punch the right half (the tail part) at the left side of the card, and the left half (the head part) at the right side of the card. The "continuous repeat mechanism" of the machine puts the fish together again, but in a staggered position to our centered motif. To know this is very useful if we have to place motifs into a given space.

How the connection works (continued)



THE CONTINUOUS BORDER DESIGN: The proper side connections are the most important factor while designing continuous patterns. I always design right and left over the card outline on the marked graph paper, and then put my right "overflow" stitches inside the card on the left side, and vice versa. The wave pattern for instance, has 12 stitches for one repeat. See also Page 46. If we have a symmetrical repeat, the design, including the space between, has to be divisible into 24, (e.g. 12 - 8 - 6 - 4 or 3).



THE ALLOVER DESIGN - THE LENGTH CONNECTION

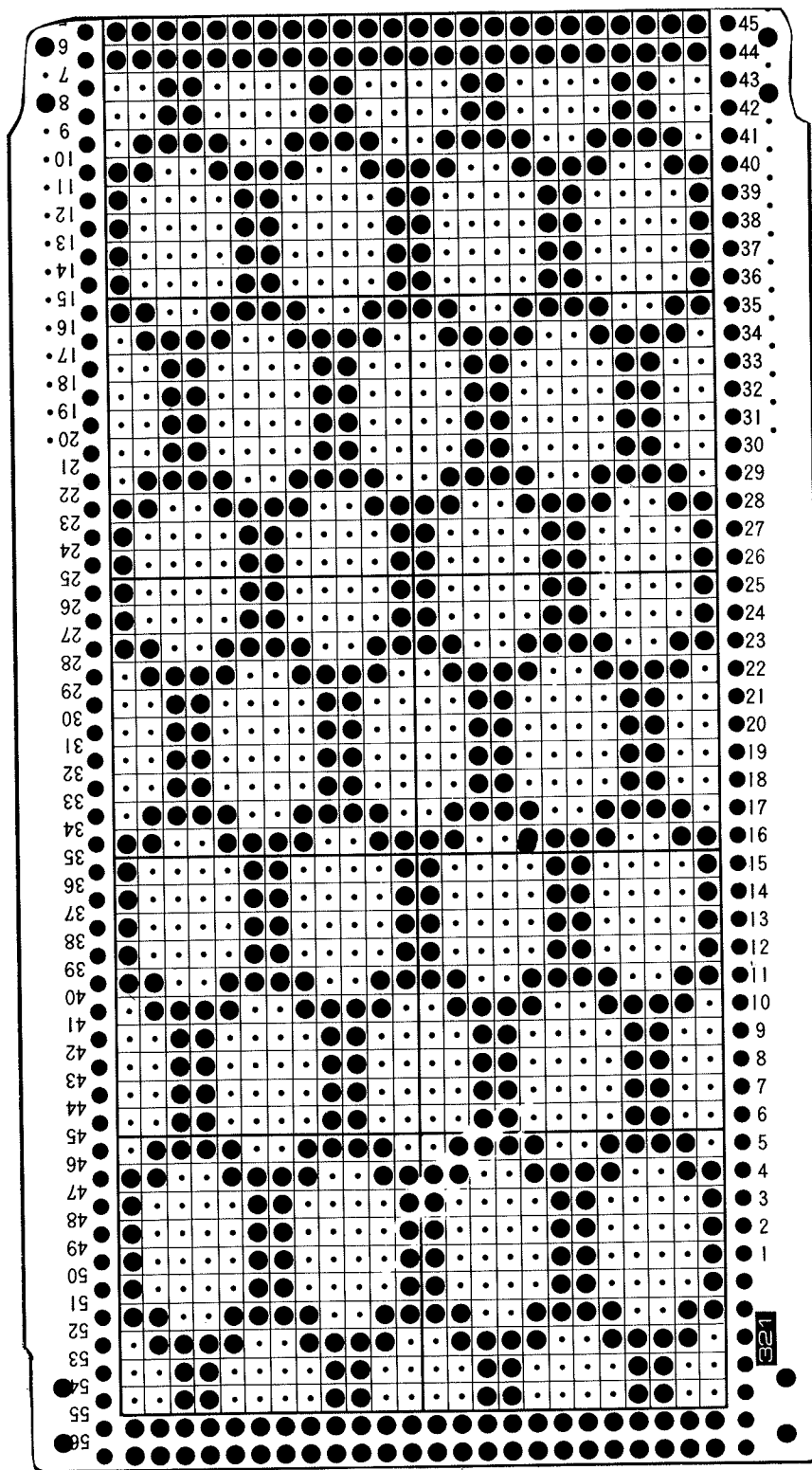
The Allover Design: The allover design has to connect at the sides as well as in length. For the length connection, we need a minimum of 34/35 fields in height, plus the extra 2 rows of holes on top and bottom of the card, which are only for the overlap, to close the card. There is no limitation in lengths. If the 60 rows of the card are not long enough for a continuous repeat, we have to clip on a "cut-to-size" piece of a new card. This piece, however short it may be, has also to start at the bottom with 2 fully punched rows of holes and end with another 2 rows for the overlap.

Example: If the length repeat has 12 rows, as our sample next page, we could cut the card after 36 or 48 rows of pattern fields, plus 2 rows overlap. We have 3 or 4 repeats. Or, we could leave the card at its actual length of 60 rows and have 5 times the repeat.

If the repeat needs 28 rows, we would punch 2 repeats (56 rows) plus 2 rows overlap at the top (totals 58 rows). That means we have to cut off the old overlap of the card plus 2 rows of fields.

In case our length repeat requires 32 rows, our card would be too short for one repeat, because the closed card has to roll around the tube inside the pattern panel. But it would not be long enough for 2 repeats either, which would require 64 rows of fields plus the 2 rows overlap. We need an additional card piece of 4 rows of pattern fields, plus 2 each overlap rows at top and bottom, to clip on.

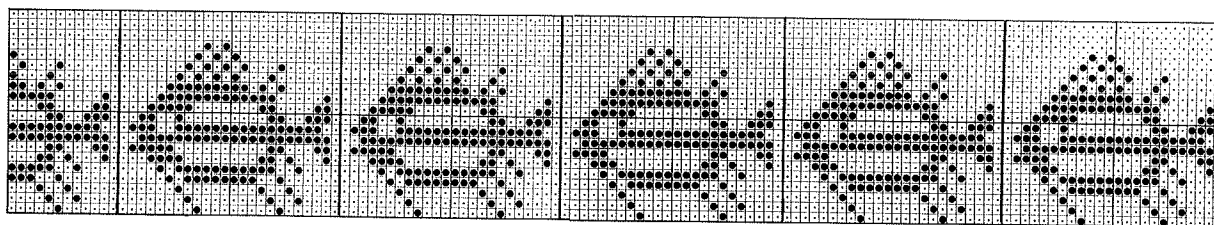
The Length Connection, continued



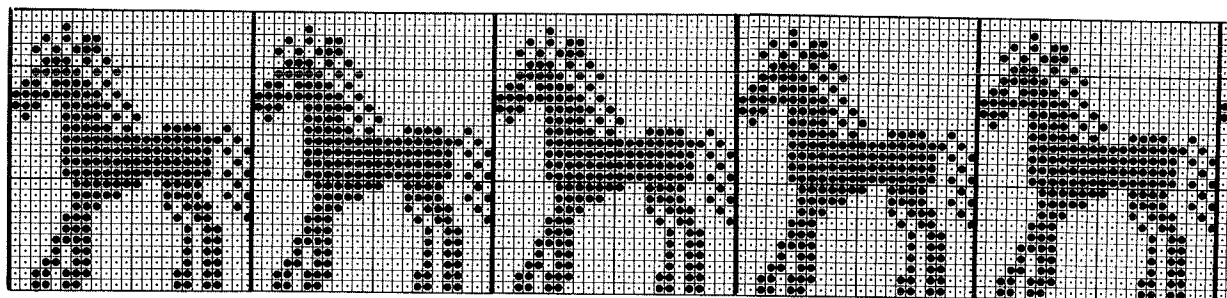
With a length repeat of 12 rows.

THE SPACE BETWEEN MOTIFS

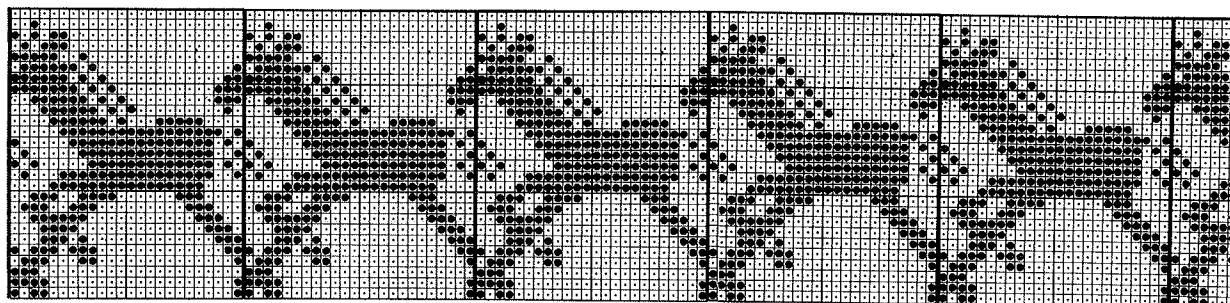
We have 24 fields in width to work with.



The fish motif has 22 stitches. We place the motif one field each side from the outline of the card. That gives us 2 stitches between the fishes in our repeat. If we use the full 24 stitches of the card, the fishes would be connected at head and tail.

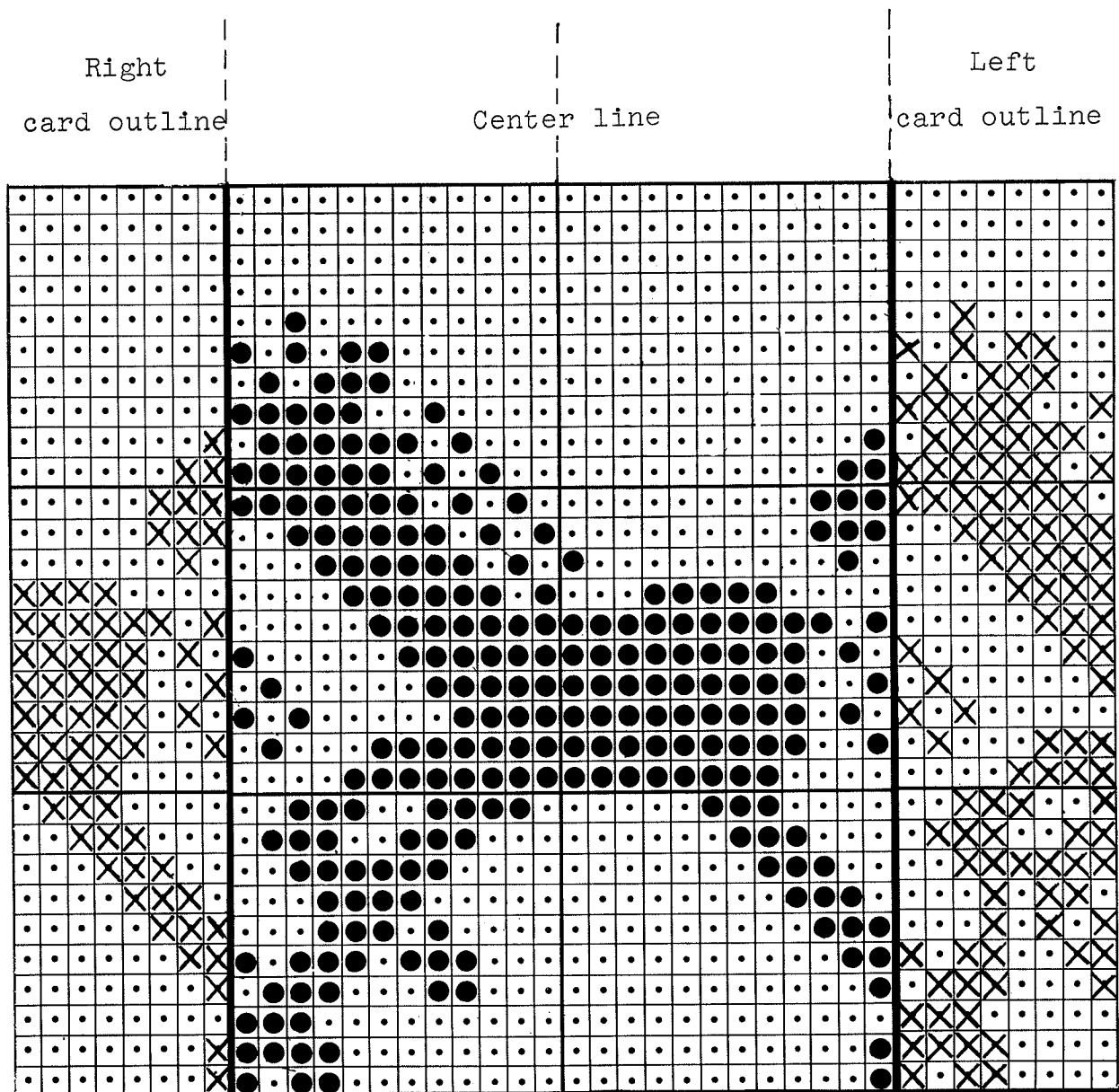


With the "standing" horse design, we can make use of all 24 fields for each individual horse, because their head and tail are on a different level, and do not get connected despite the card being used to the outline at both ends.

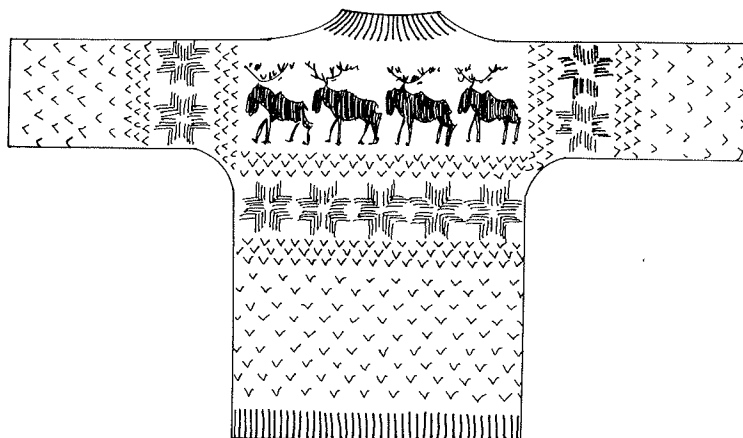


The "running" horse has 30 stitches, but since we are overlapping them, we still get the repeat without connecting the individual motifs. The mouth of the horse, which extends past the left card outline has to appear inside the card on the right side. The part of the tail extending to the right outline, appears punched on the left side. Detailed graph Page 53.

First mark the centerline and the right and left card outline on your graph paper. Then design your motif. If the shape runs over some fields of your right or left card border, it does not matter, as long as you have room for the overflow on the corresponding I N S I D E of the card. Read the "side connections" again, on page 49 and the last paragraph of page 52.

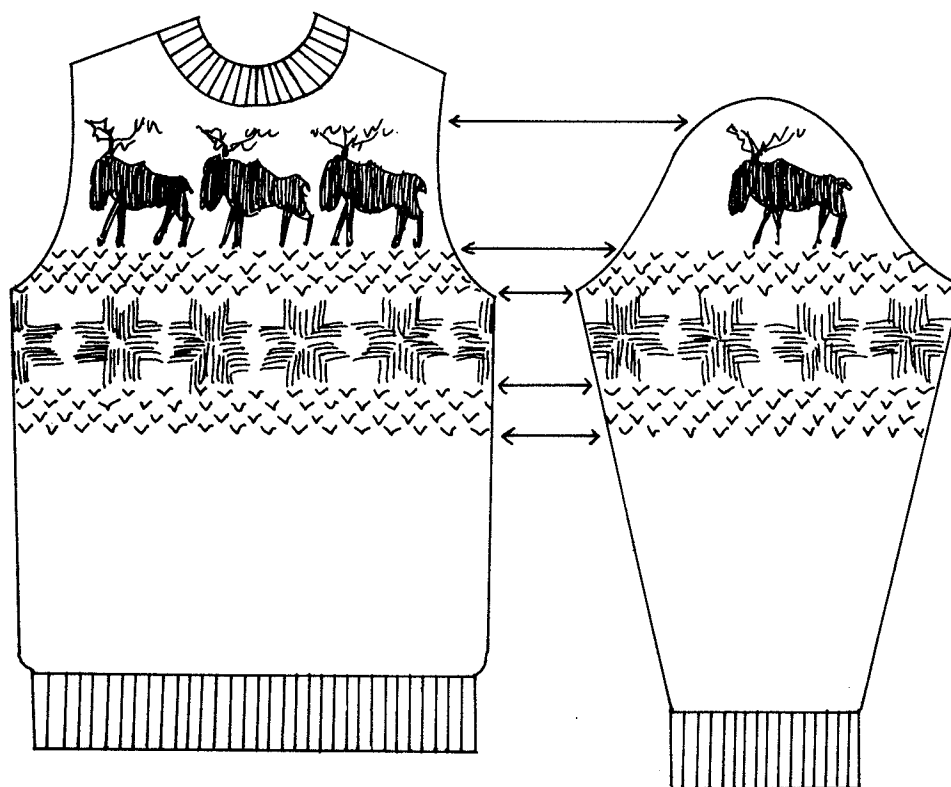


HOW TO PLAN A REPEATING MOTIF DESIGN INTO A GIVEN WIDTH



If we want to knit a sweater with a repeating motif design—whether it be Norwegian or Indian inspired or completely free-designed, one has to plan it so that the motifs are not half way cut off, neither at the yoke or at the neckline, nor at the armhole or at the sleeve crown. With the rectangle shape, it is very easy. All we have to do is to count how many full motifs can we place across chest, or any other given width. We have to calculate first, how many stitches we have available for our width and then see if we can fit 3 or 4 or 5 motifs, depending on pattern size, thickness of wool and gauge. If we have an uneven number of motifs, we have one center design and can take the card as we are most likely to have originally punched it. If we can place 4 motifs, the sweater center would be between the two middle motifs. The design then has to be punched "split" as we have learned (see Page 46). With the new "Single Ornament Attachment" one can also cancel out the beginning or end of a new repeat, in case we have a few stitches more at each side than necessary for our full motifs. One also has to watch the vertical dimension of the design so that the tops of the motifs are not cut off through the neckline, into the given width and length of a sweater.

How to Plan a Repeating Motif Design, continued



If we have a conventional "set-in" sleeve, we have to watch for a few more things.

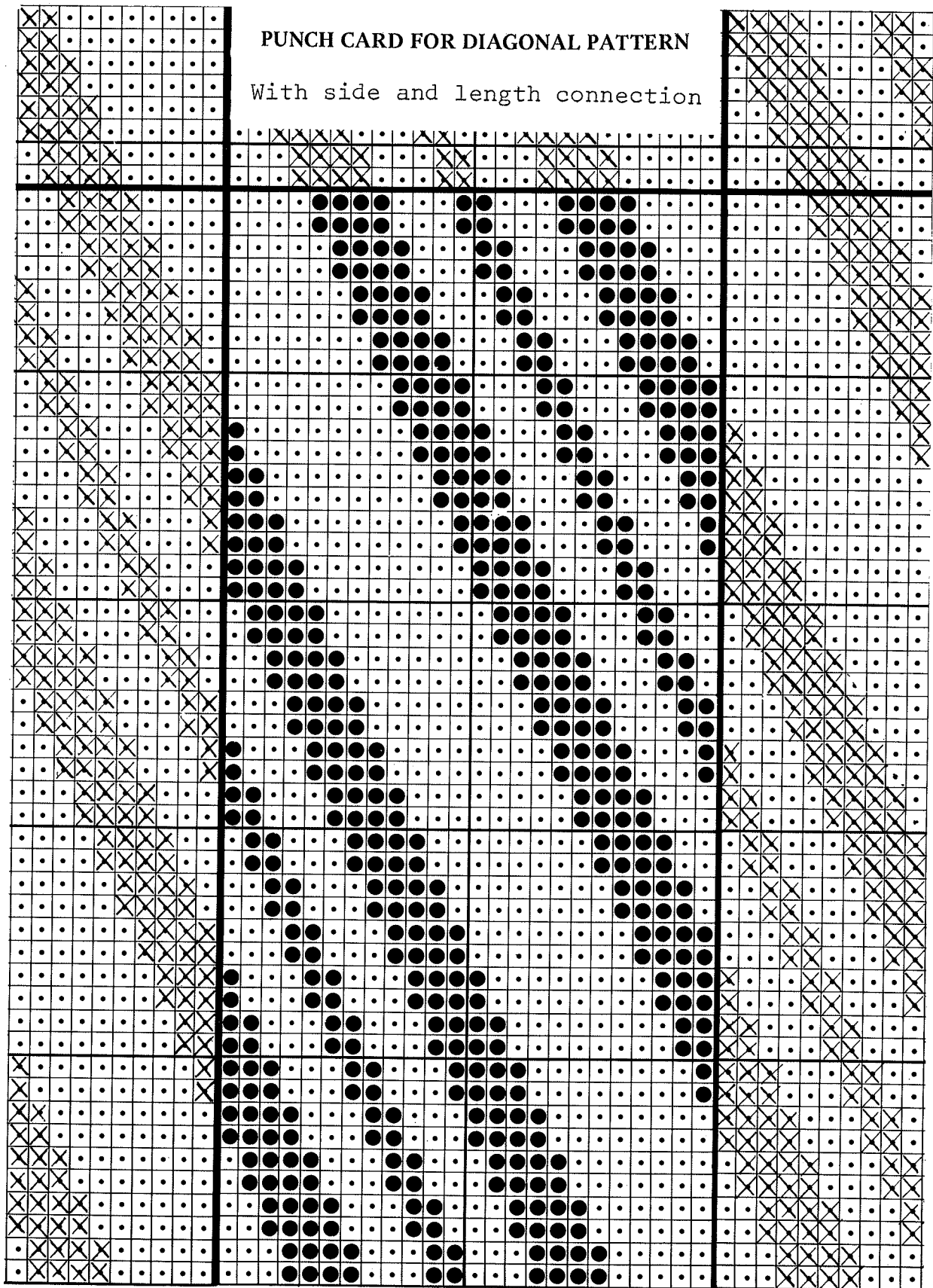
My first step is to plan my motif vertically into my sleeve crown. I count my rows, calculate with my gauge how much space the motif needs and mark that on my paper pattern. It is essential that the motif fits properly into the sleeve crown and is not cut off at the top. The width of the crown usually takes just one motif, which I knit with the "Single Ornament Attachments" in order to cancel out the beginning or end of a new repeat.

Then I count the full length of the border design in rows and mark the space on my pattern, down from my top motif. I draw a horizontal line on my pattern, where I have to start the border.

Now I take my front pattern and match the border at the armhole going up and down from there and mark the space and starting line.

DIAGONAL CONNECTION

1. The width of the diagonal stripes has to be in relation to the 24 stitches available on our card.
2. They can be evenly divided, 4x6 or 2x12, or unevenly as 8+4 twice, or 3+9 twice, or 20+4, etc., as long as their sum equals 24 stitches (it could even be 4+8+4+3+2+3).
3. One has to design over the side edges in order to find the proper connections, so that the diagonal continues. Whatever extends over the right outer edge of the card has to appear inside the left inner edge.
4. One also has to find the proper vertical connection. Therefore one also designs over the bottom edge. The design part which is under the bottom line has to be the last one at the top of the card in order to have a continuation.
5. The card has to have a certain length in order to go around the roll inside the pattern panel. This length has to be at least 35 rows. Therefore, one has most likely at least 2 repeats, depending on design. If the design is already over 35 stitches one needs only 1 repeat. If the design is very short one needs 4 or 5 repeats before connection.
6. In order to close and overlap the card properly for a continuous repeat, one has to add 2 more rows, totally punched, like the bottom. The edge should be tapered a little, and the 2 holes on each side have to be punched in for closing the card.



KNIT-IN DESIGN FOR EVERY OTHER NEEDLE

We are now knitting on every other needle, with heavy yarn, (Double Knit on Tension 8 or 9). This alters our tension very much, and makes it possible to use some heavy yarn, which we otherwise could not knit on every needle. We can use only 100 of our 200 needles. Every other needle is pushed to A-position, where it DOES NOT KNIT. Make sure the needle right of center 0-mark, which we call the center needle, is in working position.

We now want to punch a card for a "Knit-in" Design for an every other needle knit. We first design our ornament or motif over 12 fields, see Figure A next page. Then we transmit the 12-stitch design to our 24 needle card, leaving every other vertical row blank. This matches our needles in A-position. We start with the center needle, and punch the whole length of the design in vertical direction to the card. We continue punching the design in VERTICAL ROWS, omitting every other needle and thus spreading the motif over the whole 24-field card. Figure B next page shows it very clearly.

Again, I mention to be aware that your needles in working position correspond with the punched pattern needles, otherwise there will be NO PATTERN!

Knit-in Design for Every Other Needle, continued

Fig. A
Design over
12 stitches

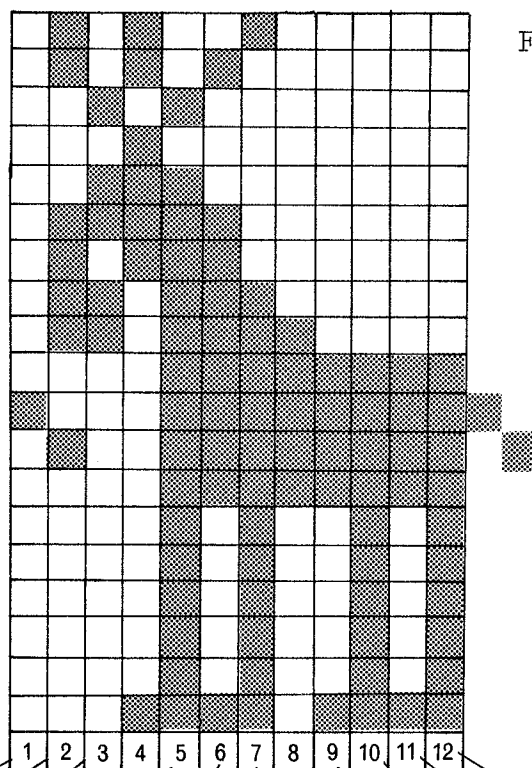


Fig. A

Fig. B.
Same design
spread to 24
stitches for
knitting on
every other
needle.

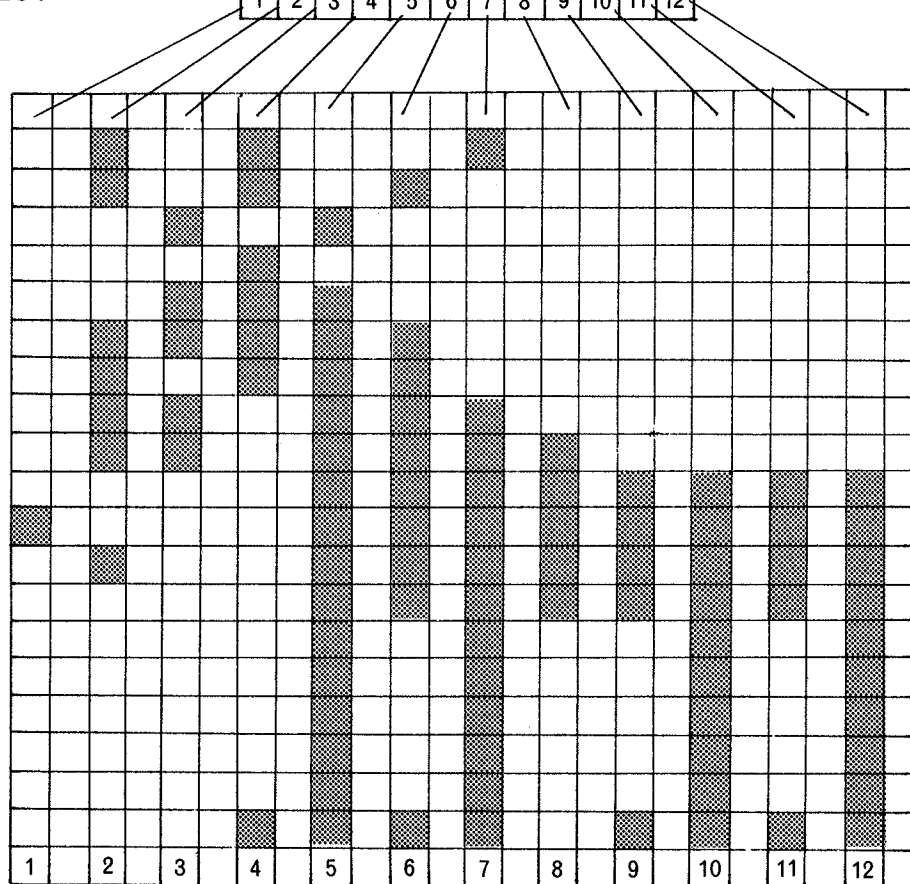


Fig. B

THE SINGLE ORNAMENT

We are now knitting one single motif instead of a whole row of repeated ornaments. I am not going into the technique itself. The different models of our knitting machine have different single ornament attachments and it is explained in your instruction book how they are installed and work.

1. We can use any motif we punched on to a card as a single ornament.
2. The ornament can be as big as the full width of the card (24 fields) because it is single and cannot connect with a "next-one" as in a row.
3. We knit the single ornament either between the diamonds, then we take the centered motif, or we place it between the crosses which would require the "split-motif" (see page 46 & 48)
4. Do not use a motif which is overlapped on the card if you are a beginner. It causes trouble, because it would knit the card as it is. Our example, the running horse, (page 53) would have the mouth part missing, which would appear on the back side of the horse, while the tail part would show at the front and be cut off at the back. The feet would also be deformed.
5. If you have the "magic points" with your single ornament attachments, you can move the points. Taking the sample of our running horse again, you have to move both points.

The Single Ornament (Continued)

The yellow point has to be moved 3 needles over in the direction where the mouth should appear. The red point is moved 3 needles over in the same direction to cancel it out in the back. With the tail part both points have to be moved 3 needles towards the tail direction, adding it to the tail and cancelling it out at the front. If you cannot visualise it, look again at page 53 . We are knitting the horse practically over 30 fields instead of 24. One has to watch the proper rows, where the moving of the points has to occur, because this manipulation requires some skill.

6. I find it easier to pull the extra needles out by hand. In this case one would have to punch the running horse without the overlap of tail, mouth and feet. One puts the graph beside the machine and pulls the missing needles out according to the graph. Check also page 62 for technique.
7. If we are talking of single motifs, that does not mean just ONE single motif. We can, for instance, knit 2 or 3 motifs in a row and leave the rest in plain knit. We place the yellow point bordering the left motif and the red point bordering the right motif. This is especially useful if one knits Norwegian type sweater and wants to cancel out the beginning or end of another motif; in case, one has a few stitches more each side than the motif requires. See Page 54..

The Single Ornament (Continued)

8. One can also place the motifs with a full space of 24 needles apart, as long as one stays either between the diamonds or the crosses. One has to use 2 pairs of magic points then.
9. "Single motifs" which are spaced 24 needles (or one card width) apart, can be knitted in different colours. One knits the first motif in colour 1 (feeder 2) and stops the carriage as soon as the motif is knitted, unthreads colour 1, puts the yarn out of the way, threads the second colour in feeder 2 and knits the next motif. One can do that easily, because one has 24 stitches between the motifs and that is room enough for this manipulation. One can use the same technique also if one has 2 motifs 48 or 72 stitches apart and knit each motif with a different ball of wool, to avoid big floats.

SINGLE ORNAMENT, COMBINED WITH PULLING EXTRA NEEDLES BY HAND

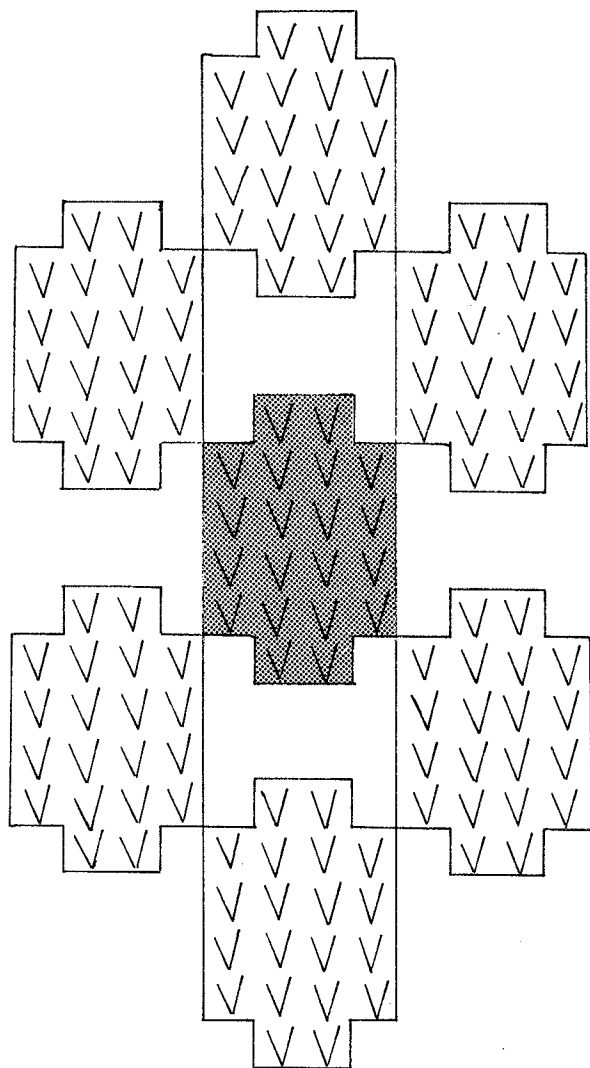
We use our punched motif card and the single ornament attachment, but pull some additional needles out by hand. Remember, the ornament colour in feeder 2 is knitted by the needles which penetrate through the punched holes in the card to C- or D-position. Any needle we pull out additionally will also be knitted in the ornament colour. The front levers have to be on II. This technique is very useful if the motif is a bit bigger than our 24 needle card. I mentioned this already in #6 of the Single Ornament chapter, page 61, where I suggested to pull the mouth, tail and feet parts of the horse by hand instead of moving the magic points. It is also good to use if one wants any extra ornaments, outside the limit of our 24 fields of the card. A small vertical border design, a flower (see next page), as I put in front of the horse, or even a straight vertical line.

**SINGLE ORNAMENT**

Combined with extra
needles which are
pulled out by hand

KNIT IN A THIRD COLOUR

Into a two colour design, knitted by hand



This is only a way to give an accent in a 3rd colour, as for instance, the center of a flower. The 3rd colour is knitted in by hand.

The 2nd colour needles, penetrating through the holes of the punch card, are knitted by the carriage in C-position. (Yarn in feeder 2). Therefore, any needle we pull out to D-position is untouched by the regular 2 colour "knit-in" process, and can be knitted in by hand with the 3rd colour, as long as the front levers are on I. It is more practical to keep

the yarn of the 3rd colour on the floor in front of the machine. One can keep the yarn "out of the way" more easily if it is not fed through a second tension rod.

We regulate the tension while we are knitting the D-position needles one by one, with the 3rd colour by hand. Every row of the 3rd colour has to be pulled out anew, before knitting with the regular 2 colours.

Knit in a third colour (continued)

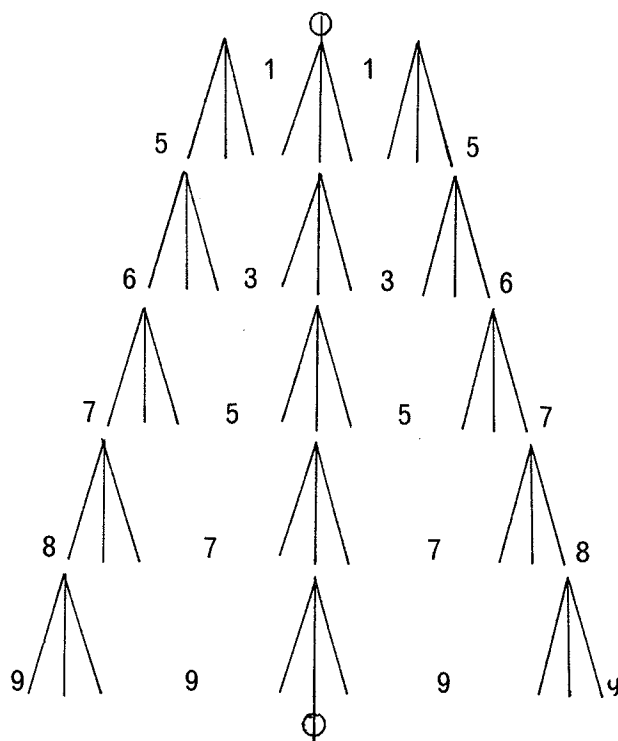
Exercise: Punch yourself a design for 3 colours. It does not matter if the fields for the third colour are punched out or solid, because the punchcard mechanism does not interfere with the needles pulled out to D-position, as long as the front levers are on I. Keep your graph design beside you, to pull out the 3rd colour needles properly according to your graph.

Set the machine the regular way. Card inserted, main colour in feeder I, ornament colour in feeder 2, yarn separators at the ends. Knit pattern to the row, where the 3rd colour has to be added. Put front levers to I. Pull 3rd colour needles into D-position. *Knit the row with the two colours fed into the feeders the regular way. Then knit the needles left in D-position with the 3rd colour by hand and pull them right away into D-position again for the next row, following the pattern design. Repeat from *.

Watch your tension while knitting in your 3rd colour. One has a tendency to pull the yarn too tight and that can distort your knit.

KNIT A TOQUE

We are knitting a toque in a mock rib, which has a fully fashioned crown, where the stitches are reduced for a "form-fit". We have 4 decreasing rows for which we take off on contrast yarn and put the reduced knit back to the machine.

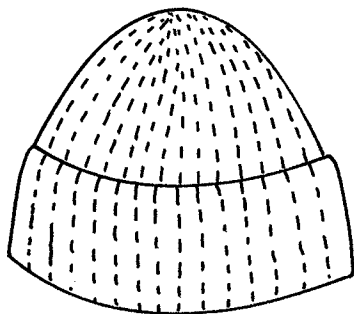


Exercise:

Cast on 39 st. on every other needle. Mark center stitch. Knit 20 rows on tension 4. Take off on contrast yarn. Put back to machine, reduced in width, as follows: put center stitch back to center needle. Put the adjacent stitches on both sides to same needle, (3 st. on one needle). Hang the next 7 st. on either side back to machine as they come. Hang the next 3 st. onto ONE needle again.

There should be 8 st. left each end, and we have reduced the total of 6 st. in this one row. Change to tension 3. Knit 6 rows, take off on contrast yarn and follow the same procedure, putting them back to machine, starting with center stitch to center needle, but having only 5 st. between the decreases. Knit 6 rows. Take off again, put back to machine decreased, leaving 3 st. between the decreases. Repeat again, leaving only 1 stitch between. Change to tension 2. Knit 4 rows, take off on contrast yarn and pull the last row of stitches through their loops together with a blunt needle.

BASIC TOQUE IN MOCK RIB



Cast on full width of machine on every other needle (100 st). These instructions will only give you a basic way to knit the toque and how to decrease for the crown.

The proportion of the double mock-rib welt has to be established according to your own taste and fashion interpretation.

For a ca. 14 cm. double welt, we knit 120 rows on tension 4, straight knitting. Now, hang cast on loops to same needles in use, forming the turn. Start with center stitch and work to both sides, to make sure it is even.

Mark centre stitch with safety pin or contrast yarn. We are still knitting on every other needle! Knit 14 rows. Do not cut thread. Fasten in clip, but leave enough length not to pull the stitch out of last row. Then take the whole knit off on contrast yarn. Hang the piece back to machine, decreasing the following way: Hang centre stitch to center needle and next 3 st. on either side of centre as they come. (7 st. in center of machine).

*Put the next 3 st. on each side to ONE needle, middle stitch first, then the 2 side stitches - this is very important! (We are decreasing 2 stitches).

Toque in mock rib (continued)

Hang the next 7 stitches on either side back to machine as they come and repeat from *. We should end with 3 st. at right and 4 st. at left, having decreased 10 st. each side. Put empty end-needles each time to A-position!

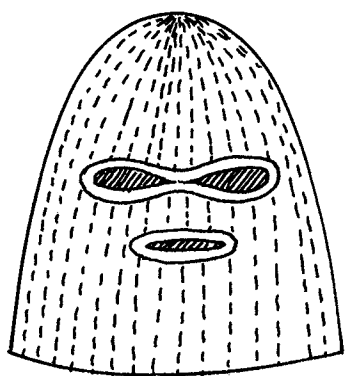
Change to tension 3. Knit 6 rows and take off again on contrast yarn. Follow the same procedure of decreasing, while hanging the stitches back to machine, but leave only 5 st. between the decreases. Start with center stitch and 2 st. on either side. Knit 6 rows, (another 20 st. lost).

Change to tension 2. Decrease again, leaving only 3 st. between decreases. Knit 4 rows, (another 20 st. lost).

Change to tension 1. Decrease, leaving only 1 st. between decreases. Knit 4 rows. There should only be 22 st. left. Take off on contrast yarn. Pull the 22 st. together with the end of your wool and a tapistry needle and secure them.

Graft back seam together.

The inner and outer part of the welt should each be grafted separately.



WINTER HOOD WITH "CUT-OUTS"

Cast on full width of machine on every other needle. (100 st), 4 ply wool.

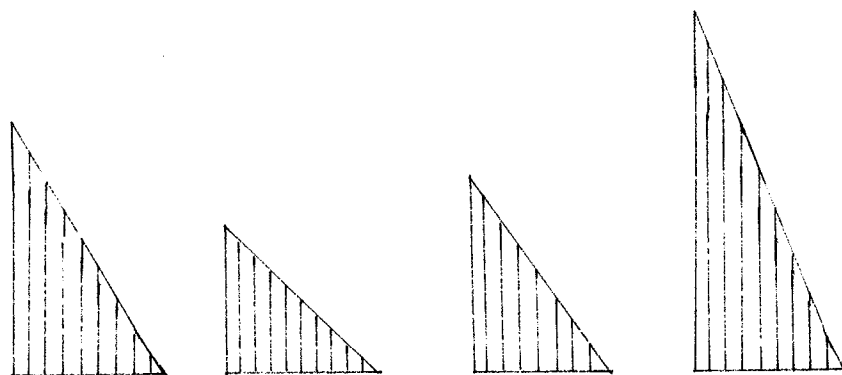
Start on tension 5. Make a small double welt of 10 rows. Knit 78 rows straight.

Take separate yarn and cast off the 10 center stitches very loosely! (Wind thread an extra time around sinker between each cast-off stitch. Do not cut yarn yet. Lift yarn loops from sinkers, pull same 10 needles to D-position and cast them back on again by looping around them with the same yarn. It is advisable to use weights. Knit 26 rows straight (knit extra carefully over the first 2 rows, because of the loose loops). We are at row 114. Cast off the 20 center stitches, same way as before and loop them on again. Knit straight to row 144. Take off on contrast yarn and decrease for crown in the same manner as for our toque. Page 69.

1. Decrease: 7 st. apart (lose 20 st.) Knit 20 rows.
2. Decrease: change to tension 4. Decrease 5 st. apart (lose 20 st.) Knit 10 rows.
3. Decrease: 3 st. apart (lose 20 st.) Knit 6 rows.
4. Decrease: Change to tension 3. Decrease 1 st. apart (lose 18 st.) Knit 4 rows.

We should have 22 st. left, which are woven together. Graft back together.

There are different possibilities for finishing off the eye and mouth openings. One can just turn them with a small hem to the inside. One can knit an extra band in very fine wool and graft it around. One can crochet around the edges.



SLANTED EDGES

Exercises: (Tension 7, 4-ply wool).

#1: Cast on 60 st. Knit back and forth *decrease 1 st. at left side. Knit back and forth. Repeat from * till all stitches are used up.

#2: Cast on 60 st. Knit back and forth *decrease 2 stitches at left side. Knit back and forth. Repeat from * till all stitches are used up.

#3: Cast on 60 st. Knit back and forth, *decrease 1 stitch at left side. Knit back and forth. Decrease 2 stitches at left side. Knit back and forth. Repeat from * till all stitches are used up.

#4: Cast on 60 st. Knit back and forth, *decrease one stitch at left side every 4 rows, repeat from * till all stitches are used up.

Compare all 4 samples. They will help you in calculating slanted edges. Sample #3 comes close to an angle of 45° , which, when used on both sides makes an approx. 90° or rectangle.

FACING WITH MITRED CORNERS

For Side Slits:

Exercise: Cast on 30 st.

Knit back and forth.

Increase one stitch each side.

Knit back and forth.

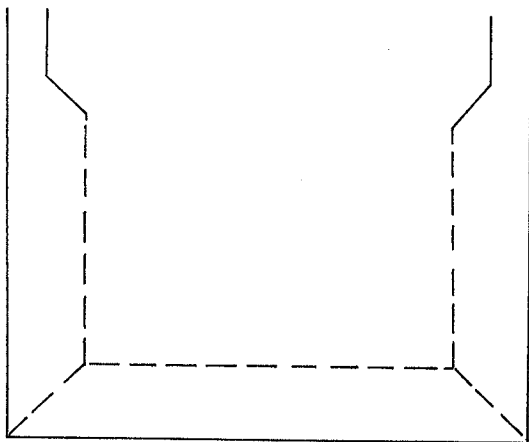
Repeat 4 more times, till you have 40 stitches.

This is your hemline.

Continue increasing one stitch each side for another 5 times.

Knit 30 rows straight.

Decrease one stitch at a time on each side, every other row, 3 times total. Knit another 20 rows straight up over 44 st. Cast off.



Baste fold in exact stitch or row line. Slipstitch corners together and steam hem and corners.

SHORT ROWS OR PARTIAL KNIT

"Short Rows" are a method to manipulate certain sections of our knit.

- a) We use it to separate the fabric and work each section alone, as for slits, vertical buttonholes, pockets and necklines.
- b) We use it to put width into only parts of our fabric, as for gores in skirts, or all types of ruffles. We insert little wedges to curve facings or form circular shapes for tams. We can also reduce width with the same method for all kinds of darts.
- c) We use it also to shape a gentle slope as for rounded-off hems, raised backs, shoulders, different shaped sleeves.
- d) Heels, toes, fingertips, mitred corners on collars and shawls, or raglan shapings are also achieved through "short rows".

How do we "MANIPULATE"? We knit only with a selected group of needles, leaving the resting needles untouched. We pull the needles which we do not want to use into D-position and work only with the needles in B-position.

While knitting short rows THE FRONT LEVERS ALWAYS HAVE TO BE ON I, otherwise the needles will knit back to work.

The number of needles in work changes according to our wanted shape and calculation, sometimes as often as every other row.

Before starting any exercise in short rows:

1. Repeat needle positions: Page 3.
2. Repeat front leavers and their relation to the needle positions: Page 4.
3. Repeat slip over stitches: Page 6.

We have 2 different groups:

- i) The openings and slits, where we want NO CONNECTION of the different parts, we therefore knit strictly the selected group of needles straight up.
- ii) The shapings, where we have to change the number of selected needles constantly. To achieve this, we have to turn our row in the middle of the fabric. In order to prevent a hole, where we are turning, we wrap the yarn under the closest needle in D-position at the carriage side, before we return. The thread then lies on top of the D-position needles, when the carriage is moved. Recheck your tension before returning the row.

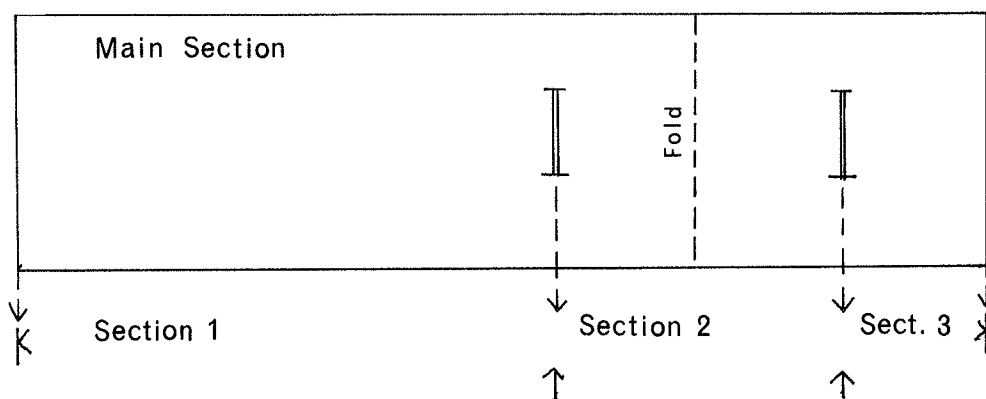
Here are the main items, done with short rows:

Slits	Page 76	Circular Forms	Page 118
Openings for Zippers	" 78	Straight & Curved Facings	" 122
Shoulder	" 79	Darts	" 129
Necklines	" 80	Heels, Toes, Stockings	" 138
Rounded-off Hems	" 91	Mitts, Gloves, Fingertips	" 146
Raised Backs	" 94	Mitred Corners, Basic	" 160
Fancy Sleeve Shapes	" 95	Mitred Corners for Collars	" 162
Pockets	" 96	Mitred Corners for Shawls	" 164
Gores & Ruffles	" 107	Squares & Oblongs	" 165

SLITS, VERTICAL BUTTONHOLES

For all slits and openings one has to split the fabric and knit in sections. The resting parts are either taken off on contrast yarn, to be totally out of the way, or pulled to D-position with front levers on I. (See short rows, page 75), or Page 77.

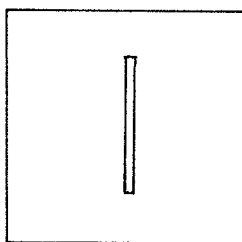
One of the most important things while knitting slits is to count the rows on either side to get the fabric even. If the row counter is used, do not forget to put it back to the starting point of the slit after finishing one section. For instance, "closed-in" slits, as for vertical buttonholes, have to be knitted in 3 sections, which, at the height of the buttonholes are united together until the next buttonhole-set starts.



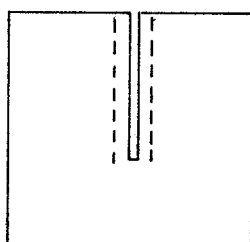
Slits to pull a cord or belt through are done in the same manner, except that one has to work in as many sections as necessary.

Open slits are often worked out with small facings for which a few extra stitches are increased on each side of the slit.

SIMPLE SLIT AND SLIT WITH FACING



Sample 1



Sample 2

Exercise:

Cast on 40 st. Knit 20 rows.

Carriage is at right.

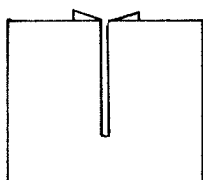
Sample 1: Pull left 20 needles into D-position. Front levers on I. Knit 20 rows over half your needles. Carriage is at right. Break thread. Pull right 20 needles also into D-position and move carriage over to left side. (Make sure side levers are to the front).

Put left 20 needles into C-position. Right needles stay in D-position. Knit 20 rows over left needles. Carriage is at left. Put front lever to II and knit from left to right over all needles. Knit 20 rows. Carriage is at right. (Vertical buttonholes are worked this way too).

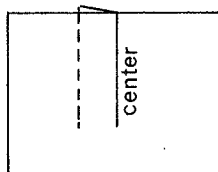
Sample 2: Unthread yarn and put it behind the machine. Pull right 20 needles into D-position. Front lever on I. Knit with contrast yarn 5 times over left needles. Unthread. Bring carriage to right side. The stitches on contrast drop. Push empty needles to A-position. Rethread yarn. Put front lever to II and knit to left side. Cast on an extra 5 stitches by winding yarn around needles. Knit 31 rows, carriage is at right; cast off.

Move carriage to left side. Put other 20 needles back to machine. Remove contrast yarn. Knit to right side, wind 5 new stitches around 5 extra needles. Knit 30 rows and cast off. Steam facing to inside.

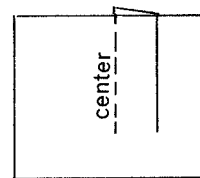
OPENINGS FOR ZIPPERS



Slot-zipper



Lap zipper



Zipper placket

1. Slit for slot-zipper: use slit sample #2 and increase only 3 stitches each side for fold.
2. Slit for lap-zipper: use also slip sample #2 and increase 6-8 stitches, depending on wanted width of lap, yarn + tension. Underlap is single.
3. Zipper placket for front closing: here we are dividing our fabric NOT at the center, but about 12 stitches (according to wanted width of placket) over to opening side. Watch if it is right or left of center, depending which side of knit we want to use. The "purl-side" is facing us. If we want the knit side to show, we have to reverse our planning. In any case, the slit is 12 stitches off center and that is the side we are knitting first. The other side is hanging on contrast yarn.

We wind on 12 new stitches for the "fold back" and knit this part straight up as long as wanted. Cast off.

Start 2nd side, knitting from outside to center, winding on 12 new stitches at facing side. (For a "double underlap" one needs 24 stitches, but for a zipper placket a single underlap is better).

Knit 2nd part same length and cast off.

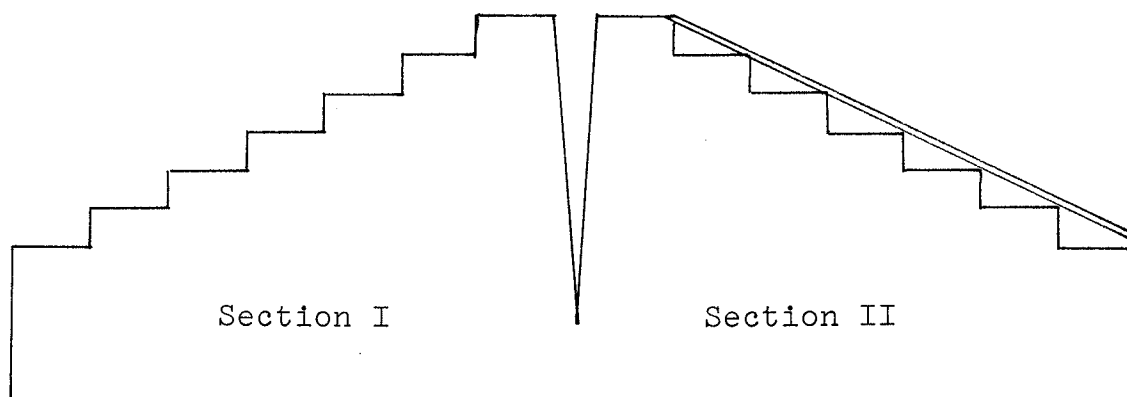
Slipstitch fold-back and underlap inside together.

THE SHOULDER

OR DECREASING FOR A SLANT

To achieve a slant (for example for the shoulder), one has 2 different possibilities:

1. One casts off in sections according to calculation.
2. One pulls groups of needles to D-position (same calculation as for 1), then knits 1 row over all needles and casts off.



We are knitting ONE sample with a slit in the center, working each "shoulder" separately in a different method.

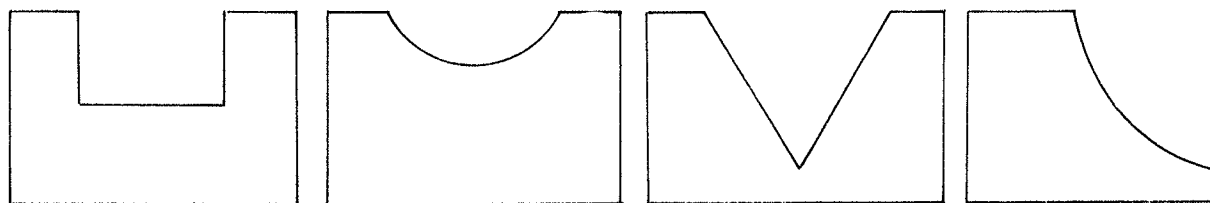
Exercise: Cast on 70 st., knit 20 rows. Part work.

Sample I - Knit 10 rows over section I. Cast off 5 stitches in 7 sections every other row, always on carriage side. This gives a little stepping effect, which disappears later on in the shoulder seam.

Sample II - Knit 10 rows over section II. We put 5 stitches opposite carriage side in D-position. *(Front levers on I) and knit 1 row. The 5 D-position needles have not knitted and thread lies on top of them. We wind thread under the closest D-position needle and knit back. Now we pull the next 5 needles into D-position and repeat from * 6 more times, or till all stitches are used up. Put front lever to 2, knit one row over all needles and cast the whole row off together.

This is a sample only. For our garment, we have to calculate the amount of stitches to be decreased each row, depending on pattern yarn and gauge.

SHAPE A NECKLINE



#1 Square Neck

#2 Round Neck

#3 V-Neck

#4 Armhole

We are going to shape different necklines. They all have one main thing in common: we part our work in the middle and knit both sides separately according to shape. While we are working one side up, the other side is put to rest, either by pulling those needles to D-position, or by putting the stitches, which are not used at this moment, on contrast yarn and dropping them. We have 4 basic exercises for this shape. We start with #1, the square neck, where we simply cast the center stitches off and knit each side separately straight up.

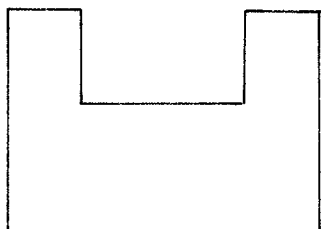
#2 is the round neck. There too we have to cast off some stitches in the center, and then form each neck side by decreasing according to shape. The second side is knitted reversed.

#3, the slant for the V-neck, is shaped by decreasing one stitch at a time, every 4 or 6 rows, depending on the depth of the "V".

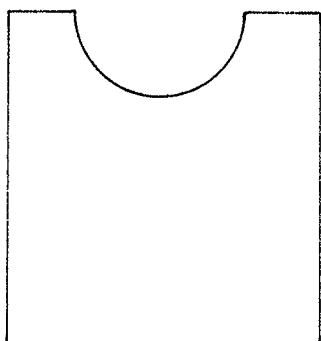
#4 is not another neckline, but the armhole, which is practically half a round neck, and I therefore put it together with this group.

We have practised only the bare shapes. The finish would be a separate band, plain, mock rib or rib; it could also be a crochet picot edge or a long turtleneck.

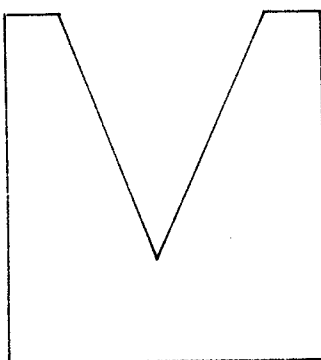
EXERCISE FOR SHAPING NECKLINES



1. Square neck: Cast on 50 st. Knit 30 rows. Cast off 30 center st. with separate yarn. Pull left side needles into D-position and knit right side for 30 rows straight over 10 needles. Cast off and knit left side accordingly.



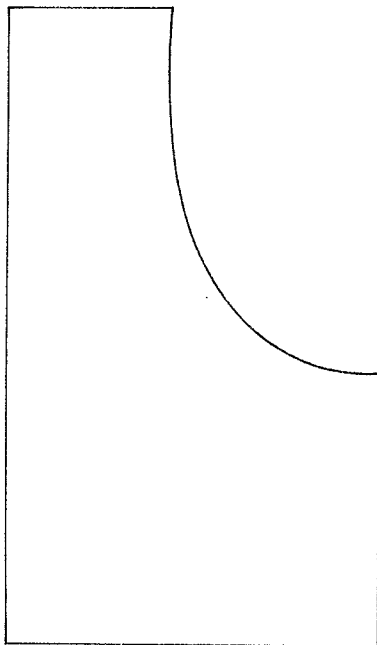
2. Round neck: Cast on 50 st. Knit 30 rows. Cast off 10 center stitches with separate yarn. Pull needles of left half in D-position and knit right side first. Knit back and forth. Decrease 2 st. at neck side. Knit back and forth, repeat 2 more times. Decrease 1 st. at neck side. Knit back and forth and repeat 3 more times. Knit 14 rows straight over 10 st. and cast off. Knit left side to correspond.



3. V-neck: Cast on 50 st. Knit 20 rows. Split work in center, pulling left side needles into D-position. Decrease 1 st. at neck side. *Knit 4 rows, decrease one stitch at neck side and repeat * 13 more times. Knit 10 rows straight and cast off. Knit left side to correspond.

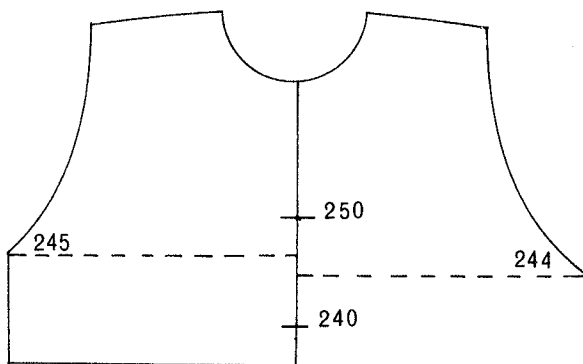
EXERCISE FOR SHAPING AN ARMHOLE

4. Armhole:



Cast on 40 st. Knit 20 rows. Cast off 5 st. at armhole side, or according to calculation. Knit back and forth. Decrease 2 st. at armhole side. Knit back and forth and repeat one more time. Knit back and forth; decrease one stitch at armhole side and repeat 3 more times (or according to calculation). Knit 6 rows, decrease 1 more stitch, knit 6 rows and repeat 1 more time.

This gives you an armhole of 15 stitches or approx. 5 cm. Knit straight up, on sample 30 rows. Cast off.



Start armhole at right side at the beginning of row 244. Start armhole at left side at the beginning of row 245.

If we knit a garment, we have most of the time an armhole on each side. Since our decrease takes place on carriage-side only, or, in other words, at the beginning of a row, our armhole start is one row apart. For instance: if we start the armhole at right side on row 244, we have to start the left armhole on row 245.

ROUND NECK, SHAPED FULLY-FASHIONED

Finished with plain double facing. The neckline stitches are not cast off, but put in D-position to shape the neckline. This leaves the edge elastic and enables us to knit the neckband right into the open stitches, which is also very important for turtle necks.

Exercise #5: Cast on 60 stitches. Tension 6 or 7.

Knit 30-40 rows, carriage at right. Push 30 needles left of center into D-position, plus 8 needles right of center. Front levers to I. Knit to the left, wrap yarn under inside needle in D-position. Knit to right.

Push 3 needles at neck side to D-position. Knit to left. Wrap yarn under inside needle, knit to right. Push 2 needles at neck side to D-position. Knit back and forth as before, wrapping yarn under inside needle. Repeat 2 more times. Push 1 needle at neck side to D-position. Knit back and forth as before. Repeat 2 more times. 10 st. are left. Knit 16 rows over these 10 needles. Cast off. (Hold neck corner down by hand).

Slide carriage to the left. Push 22 needles at left from D to C-position. Rethread yarn and knit to right. Wrap yarn under inside needle in D-position. Knit to left. Push 3 needles at neck side into D-position. Knit back and forth as before. Repeat 3 x 2 needles and 3 x 1 needle, followed by 16 rows over the remaining 10 needles. Cast off.

Front levers to II. Knit over the 40 needles in D-position with contrast yarn, several rows. Strip from machine.

Round Neck with Double Facing (continued)

Turn work around, with right side facing you and pick up the 40 st. showing as loops in the contrast yarn. Be careful to catch all the double loops! Pull out 12 more needles each side and pick up the neck side stitches. First the outside one, then the center, etc. Add 1 more needle each side for grafting. We have 66 needles now. Remember, our proportion between needles and rows is not 1:1, therefore we need fewer stitches than we had knitted rows.

For neckband, knit over all 66 needles:

2 rows tension 7

2 rows tension 6

2 rows tension 5

2 rows tension 4

2 rows tension 3

1 row tension 9

2 rows tension 3

2 rows tension 4

2 rows tension 5

2 rows tension 6

4 rows tension 7 (4 rows cover up better)

Take off on contrast yarn.

Fold neckband to outside in "fold line". (Contrast yarn is still on). Baste carefully in place and steam over it. Graft neckband on stitch by stitch, as explained on Page 85, #1 or #2.

Completion of Exercise #5**GRAFTING A ROW OF OPEN STITCHES TO A NECKLINE**

After you have knitted the neckband on to the fully fashioned shaped neckline, you have folded it along the foldline to the outside, (the knit side shows), the contrast yarn is still in. You have basted it carefully in place, and steamed over it. I now show you two different ways to graft the neckband on, stitch by stitch.

Method #1. (Which I learned at Knitmaster in London): Turn contrast yarn up, so that the "wrong side" shows and one can see the loops of the band in the contrast yarn. Go "UP" into the stitch of the band, showing on "turn-up" of contrast yarn. Go back "DOWN" into the previous stitch on collar band and into neckline of sweater where it is convenient then come out under next stitch. Repeat.

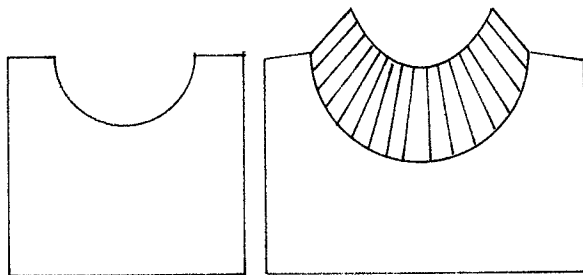
Method #2. (Which developed with my class): Unravel carefully, a few stitches only. Come from underneath and go into the first open stitch. Stitch back into the previous stitch loop (through loop and sweater neckline), and come out again from underneath in the next open stitch. It is practically the same little back stitch as method 1, only achieved in a less complicated way.

This method of grafting open stitch loops by backstitching them to the main garment piece, can be used for a lot of different seams where one wants to overlap. A ribbed turtleneck for instance, which is finished with a couple of stockinette rows and then taken off on contrast yarn, can be grafted to a finished neckline the same way. as a separate neckband.

A straight 'set-in' sleeve for a kimono effect or a yoke to a side-way-knit are also easy and effectually grafted on with the same method.

FULLY-FASHIONED ROUND NECK WITH MOCK RIB COLLAR

3 Different Finishes Given:



Exercise #6: Knit sample for round neckline over 60 stitches (neck part over 40 st.) as sample #5. Knit 1 row with main yarn over all 40 neck stitches, before taking off on contrast yarn. Pull

out 80 needles to B-position and push every other one back to A-position. Stretch neckline and hang the 40 stitches on every B-position needle, "knit-side" up. Pull up 10 more alternated needles each side, and pick up the neckline sides.

We have 62 needles:

Knit 1 row with tension 7 (if 7 was your regular tension)

Knit 1 row with tension 6, knit 1 row with tension 5

Knit 1 row with tension 4, knit 20 rows with tension 3

Knit 1 row with tension 9, Knit 21 rows with tension 3

Knit 1 row with tension 4, Knit 1 row with tension 5

Knit 1 row with tension 6, knit 1 row with tension 7

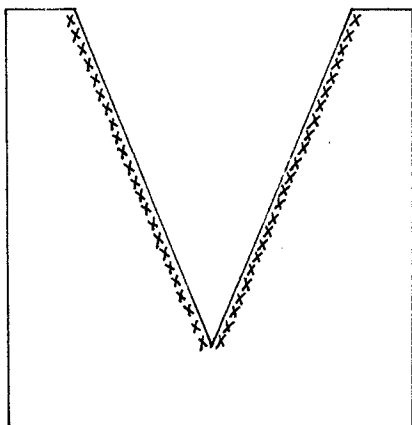
So far, the same for all 3 finishes - now comes the difference:

Finish #1: Take off on 6 rows of contrast yarn, tension 7. Baste carefully, leaving contrast yarn on. Backstitch collar on, as we did in the finish of sample 5.

Finish #2: Cast off very loosely and sew collar on stitch by stitch through each cast-off loop, after basting carefully in place. This method has no open stitches.

Finish #3: Completely done on machine. After last row of collar, knitted on tension 7, every other needle, pick up the starting loops of collar and put them on to the empty needle. Between stitches, knit 1 row over all needles on tension 10, then cast off the "crochet way" by pulling loop through loop. Steam the little ridge down. It gives a very neat finish.

V-NECK AND ITS DIFFERENT FINISHES



Exercise #7: Let's knit the V-neck shape this time with a fully fashioned decrease. Cast on 60 stitches, knit 30 rows. Pull 30 st. left of center to D-position and knit right side first, decreasing every 4 rows fully fashioned, 3 stitches inward. Start with the decrease row for better point.

Either work the decrease with 3 prong transfer tool, or transfer stitch 3 with single tool to needle 4. Then transfer stitch 2 and 1 to their neighbouring needle, to fill the gap. Repeat till 10 needles are left. Knit 4 more rows and cast off.

Knit left side complementary. Steam. So far "the shape".

There are many different ways to finish a V-neck. Here are three:

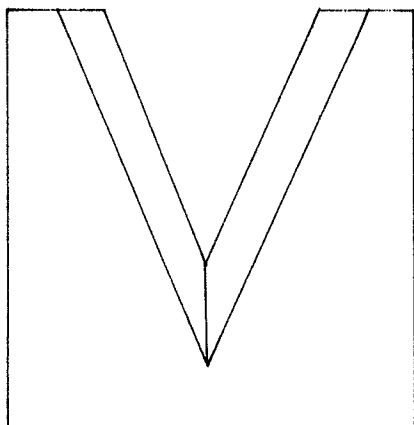
1. The separate double band with fold, is knitted on every needle. The point is sewn and overcast by machine. The facing can be put on different ways, as you learned with our first "cut and sew" samples, Page 22.

2. The double band is knitted on to the neckline by putting the fully fashioned border stitches to the machine. Each side separate. One can use plain knit on every needle or mock rib on every other needle. Use Knit-side up while putting the stitches back to the machine, if band is folded to the outside and grafted or sewn on. The point can be sewn by machine, or tapered by decreases and increases, then grafted together by hand.

3. The separate bands are overlapped at the center point. The band then is sewn into place with T-shirt finish. This is the method most industries use.

Exercise #8 and #9 are giving you a fully fashioned double band knitted on to the shaped neckline, with a tapered front point. #8 is a plain band on every needle, #9 is a mock rib band on every other needle.

V-NECK FINISH WITH BAND ON EVERY NEEDLE



Exercise #8: We have knitted the "V-shape" in Exercise #7. The neckband will be knitted in two parts and the point will be sewn together afterwards. The carriage is at right. Row counter at 000. For the first half of the neckband bring 60 needles right of center 0-mark to B-position.

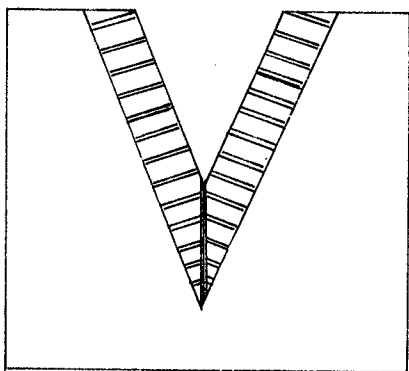
Hold the knitting with the purl side facing you, and the V-point at left. We use 60

needles to put on 80 rows, in order to compensate for the proportion between rows and stitches. Hang the point stitch to needle 1 and the end stitch to needle 60, then center each section (this distributes the stitches evenly), till all needles have a stitch. While hanging the stitches to the machine, bend the end-stitch-row slightly towards you and go into the whole endloop (both parts). Make sure to follow the same row! Add 1 needle at point-side.

Knit back and forth - use tension 7, same as sweater. Start decreasing for the point. Transfer 3rd stitch to 4th needle and at the same time transfer both of them together to needle 5. Transfer stitch 2 and stitch 1 two needles inwards, to fill the gap. Repeat 4 more times, (we have decreased 5 times). Knit to the left (row 11), change tension to 10, knit to right (row 12). Change tension back to 7 and knit to the left, increase 2 stitches by winding on loops (row 13) at point side. Knit back and forth; repeat same increase 4 more times (we are at left side). Knit to the right and cast off.

Put other side back to machine the same way, this time between needle 1 and needle 60, left of center 0-mark. The V-point is at right. Add 1 stitch at point side. Reverse the instructions, decreasing and increasing at the right side. Reverse the instructions, decreasing and increasing at the right side. The foldline is knitted from left to right at row 12. (The first increase starts at row 14). Bast in foldline, graft outer front point and slipstitch the inner facing point. Slipstitch facing inside in place.

V-NECK FINISH WITH BAND IN MOCK-RIB



Exercise #9: Knit V-shape as exercise #7. We knit our mock-rib facings again in 2 parts. The carriage is at right. Row counter at 000. Bring 65 needles right of center 0-mark to B-position and push, starting with the 2nd needle, every other needle back to A-position. We are knitting the right facing first.

Hold the knitting with the purl-side facing you. Neck point is at left. Hang the point stitch to needle 1 and the end stitch to needle 65. Center the sections, to distribute the stitches evenly. Hang the stitches to the machine, by going into both parts of the whole end loop, bending the end row slightly towards you. Make sure to follow the same row. Add 1 stitch next to point-needle, left of center 0 for grafting.

Put tension Dial to 4. Knit back and forth. Take the 3 prong transfer tool, hang the stitch of the 1st and 3rd needle right of center 0 on to the 3rd and 5th needle right of center 0. Transfer the "grafting-stitch" next to point needle, (two needles to the right). Knit back and forth and repeat 5 more times. We have 6 decreases and 11 empty needles right of center 0. We end with knitting back and forth. Knit to left. Transfer the end stitch at point side one needle to the left and pull the left neighbouring needle to B-position for the increase at the inner side of the point. Knit back and forth. Carriage is now at left. Repeat increases 5 more times (6 times in total). Knit to the right - cast off.

Knit left side reversed. Steam and baste facing fold. Steam again. Graft point at outside and slipstitch at inside. Slipstitch facing to neckline inside.

NECKLINE FINISH FOR LACE-KNIT

After shape of neckline in lace knit is secured (overcast) and cut, calculate how many stitches are necessary for the neckband.

1. Small band. Fabric used with purl side up. Neckband also on purl side.

Put neck edge close to stitching line, on to machine. (Fabric purl side facing you). Always start with center needle first, then hand the end stitch on to end needles and make sure that both sides of the neckline have the equal amount of stitches. If one shoulder is closed, treat back neck same way.

Knit over all needles, changing each row making the tension tighter. On sample 4 rows total, starting with tension 6-5-4-3: (If carriage does not go over the needles, one has to knit the first row in by hand, needle for needle).

Take all stitches off on contrast yarn (on tension 6 or 7) and put them back to machine reversed "knit-side" of fabric facing you. Knit 6 - 8 rows, reversing the tension.

On sample, starting with tension 2-3-4-4-5-6-6.

Take off on contrast yarn.

Baste carefully in place, steam, especially the contrast edge and back stitch as we have learned. Be sure to cover the row edge. If "knit-side" of fabric is used, reverse the procedure.

2. Picot edge, fabric used with purl side up, neckband is on knit side.

Read Neckline #1 first for general information.

Put neckline to machine as #1, fabric with purl side up.

Knit 2 rows on tension 6, 1 row on 5 and 1 row on 4. Transfer every other stitch for picot-fold. Knit 2 rows on tension 4, 2 rows on 5, 2 rows on 6 and 1 or 2 rows on 7. Take off on contrast yarn, baste, steam and backstitch on. Fold has to be exactly in the transferred row.

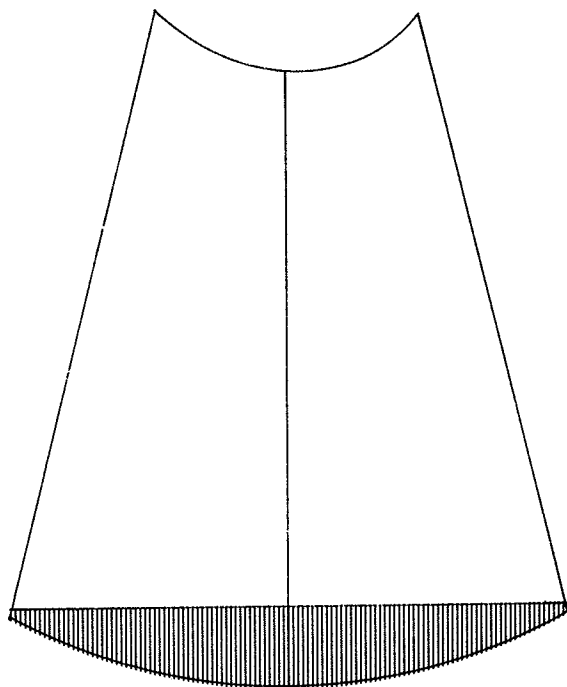
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ROUNDED OFF HEMS

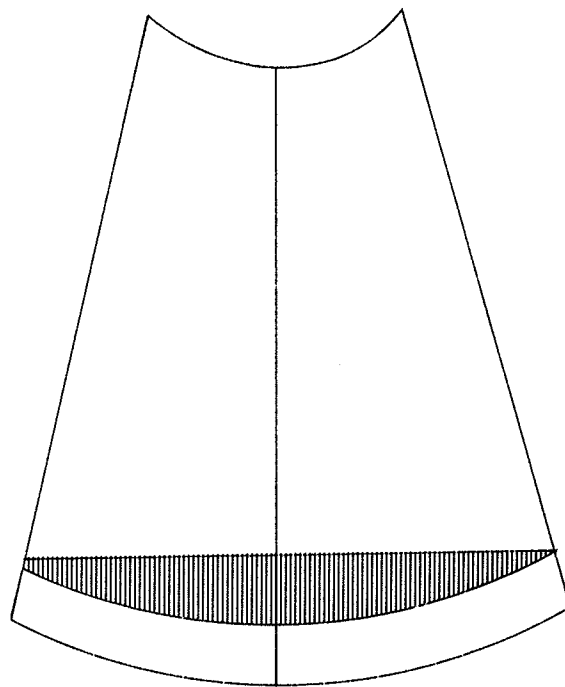
Our stitches and rows stay perpendicular to each other. We always get a right angle when we relate stitches and rows to each other. Therefore, our hemline, or our cast-on, is always straight. The construction of an A-line skirt calls for a rounded off hem, otherwise the side seams have points. Can we solve this problem?

1. We can always cut and sew, which the industry has to do anyway, but for a boutique finish this is no solution.
2. We can start in the center of the hemline and increase according to calculation towards the side seams several stitches at a time, but the finished effect is not much different from the cut and sew method. See Sketch #I.
3. We knit the hem part for the length of a single or double hem straight over 10, 20 or whatever rows; then we knit the insertion for the rounded off hem with short rows, and continue knitting straight again, decreasing at the sides according to our pattern. We have to calculate how many rows we have to insert in the center of the skirt panel and how many stitches we have to add for each short row, tapering the insertion off towards the sides. Sketch #II.
4. Knit exercises 3, Page 93.
5. If we have a punchcard border at the bottom of the skirt, we knit the border straight, then insert for the rounded off hem. Sketch #III.
6. We also have to "round off" at the top of our panel. Usually one can do that by blocking it that way. A few cm. in knit, are easily blocked "out" or "in", but if one has unstretchable yarn, one can add a little corner at each side.

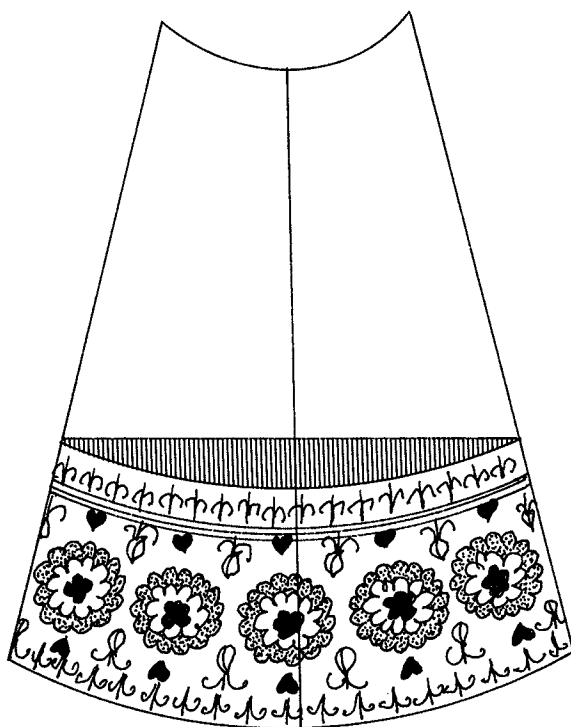
Rounded Off Hems, continued



Sketch I



Sketch II

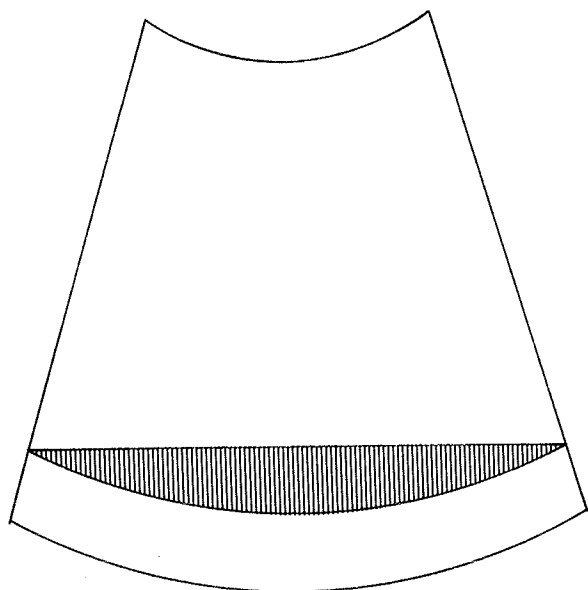


Sketch III

I rounded off hem
at the bottom of
the skirt panel

II rounded off hem
inserted above
the hem-part

III rounded off hem
inserted above
a border in
an A-line skirt

Rounded Off Hems, continued

Exercise #1.

Cast on 60 st. Knit 20 rows.

Carriage is at right.

Pull to D-position the 22 st. at left side. Knit to left. Pull to D-position the 22 st. at right side. Knit to right. We now have the 16 center stitches in B-position. (8 st. at each side of 0).

Push 8 st. back to C-position at left side starting from center. Knit to left. Push 8 st. back to C-position at right side, starting from center. Knit to right.

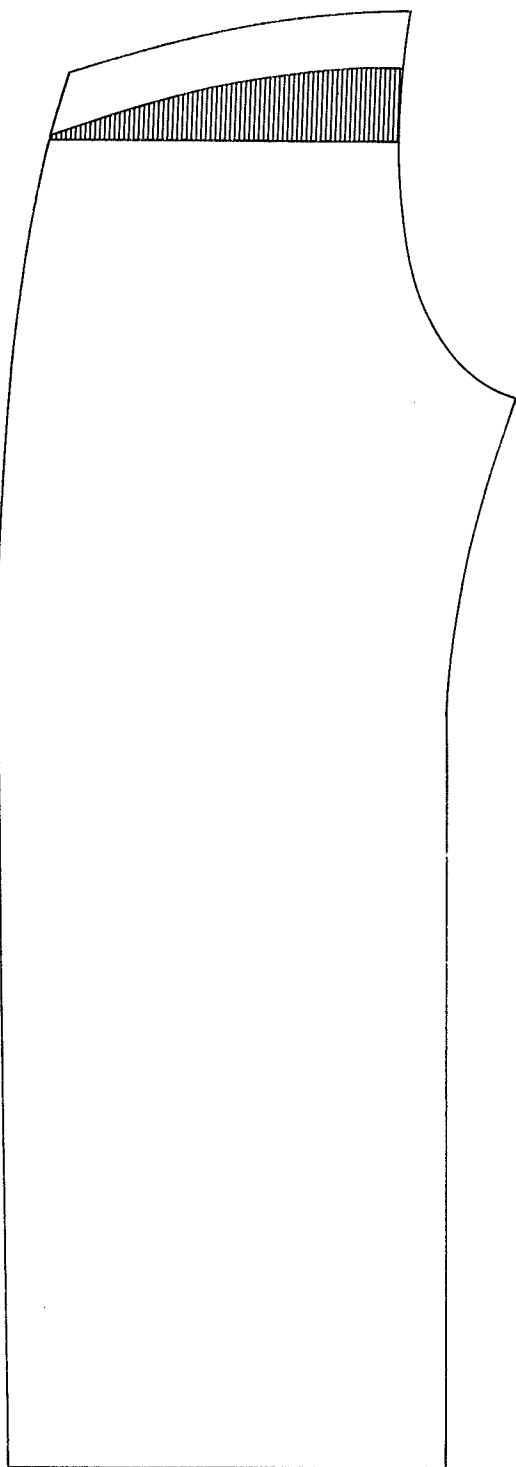
Push next 6 st. at left back to C-position. Knit to left.
 Push next 6 st. at right back to C-position. Knit to right.
 Push next 4 st. at left back to C-position. Knit to left.
 Push next 4 st. at right back to C-position. Knit to right.
 Push the last 4 st. at left back to C-position. Knit to left.
 Knit in the last 4 st. at right.

We have put in another 10 rows at the center of our sample, gradually curving up to the sides, which rounds off our hem for about 2.5 cm.

Decrease 1 st. each side and continue knitting for about 40 rows, decreasing 1 st. each side every 6 rows.

This is only a sample exercise. Calculation has to be worked out according to gauge and pattern.

RAISED BACK FOR PANTS



We insert a piece between the casing and the main body of the pants, starting at the top.

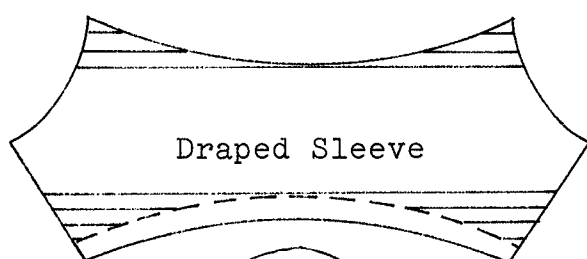
Exercise: Cast on 50 st. Knit the casing first. 11 rows straight on regular tension, 1 row for the fold on tension 10 and 12 rows on regular tension. Pick up the cast-on loops to all needles. Knit back and forth. Pull 20 needles at left to D-position. Knit to left. Pull 20 needles at right to D-position. Knit to right. Continue with short rows by adding 4x5 stitches to working needles. Knit 20 rows over all needles. Cast off.

How many rows did we insert?

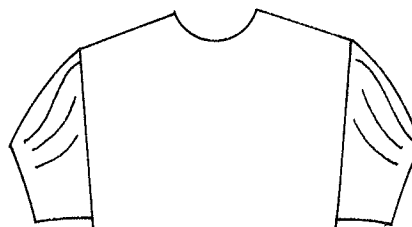
How many cm. did we raise the back?

It is a useful exercise to practise, however, in today's fashion knit it is rarely employed.

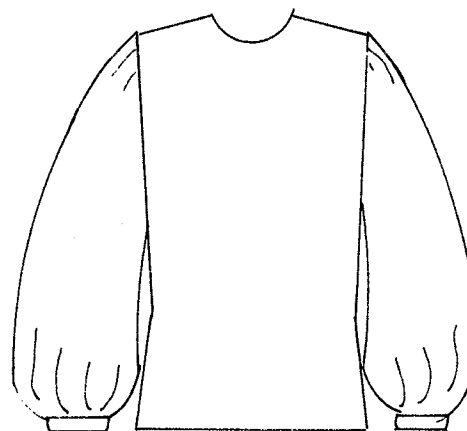
FANCY SLEEVES, SHAPED WITH SHORT ROWS



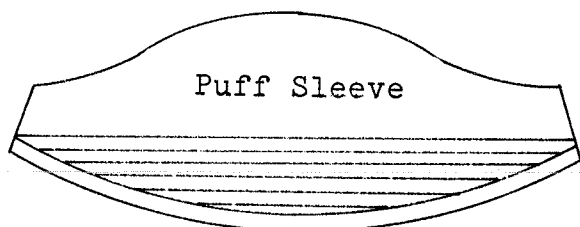
Draped Sleeve



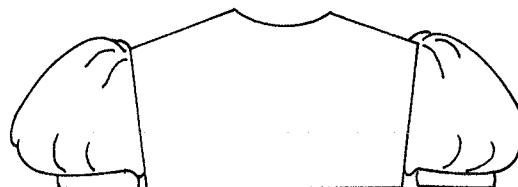
Bishop Sleeve



The short row method is very handy for knitting all kinds of puffed or draped sleeves, because we like to start with a straight band or casing. Sleeves #2, 3 and 4 are worked out in a similar way to our skirt insertion. Sleeve #1 is different. The insertions are on both sides instead of in the center. One knits the straight part first, then starts knitting the short rows from one corner towards the center, and the reverse for the other corner.



Puff Sleeve



Cape Sleeve



notes

THE POCKETS

We have three major groups of pockets which are done quite differently.

The first group are the patch pockets. They are done separately in any wanted shape or proportion and sewn in place afterwards. Sample is optional, page 102.

The second group are the horizontal slit pockets. They have an opening through the main fabric and the actual pocket hangs inside. They have to be calculated and planned beforehand, to be at the proper place. We have 4 different exercises for those pockets. The first one has a free hanging double sack, folded to the inside, which forms the slit. Page 98.

The second one is done on the same principle, but the inside sack is so long that part of it can be pulled to the outside as a flap. Page 99.

The third one is a flat single pocket where the top part has a little tuck border which is cast off. The pocket is prepared separately and inserted in place of the cast off stitches before continuing knitting the main piece. Page 100.

Pocket number 4 is a horizontal pocket knitted into a sideways knit, and therefore practically done as a vertical slit with inside pocket facings. Page 101.

The third group are the vertical slit pockets. We have 3 different exercises.

Pocket #6 is a vertical slit pocket, which is like a little pouch. Page 103.

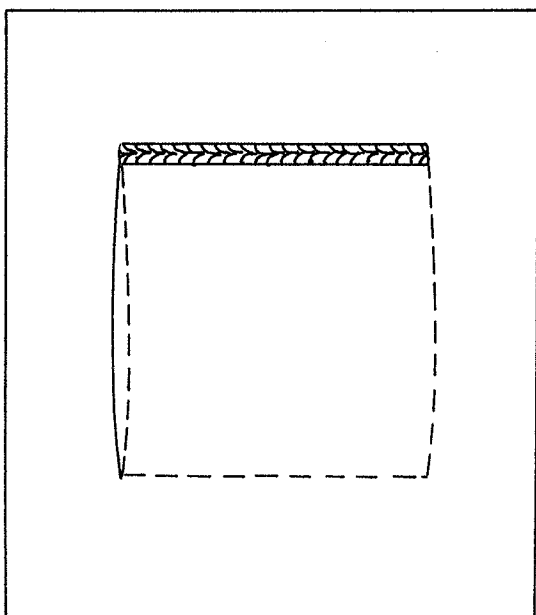
Pockets, continued

Pocket #7 is a vertical standard pocket put right into the side seam. The whole pocket sack is hanging towards the front. The back seam has two "knitted-in" notches in order to be ironed flat later on. Page 104.

Pocket #8 is also put vertically into the sideseam. The right and left top pocket facings are already knitted as an extension to the skirt or jacket side seam allowance and are folded to the inside, while the back facing is knitted as a separate piece and attached flat. Page 105.

I also give you a method for putting a pocket into an already finished garment, by opening a slit, and knitting the pocket sack into the open stitches. (Page 106). It works only in the direction of the knit, corresponding with the rows, that is horizontal in a regular knit and vertical in a garment knitted sideways. Sometimes it is easier to plan the pockets after the garment is finished.

SLIT POCKET

EXERCISE #1

Slit pocket with double folded freehanging sack.

Cast on 50 st. Knit 50 rows.

Put 12 st. at left side in D-position. Knit to left. Put 12 st. at right side in D-position.

Knit pocket-sack over remaining 26 center needles for 70-80 rows. (Do not wrap yarn around last needle, just knit back and forth, pulling the sack down slightly).

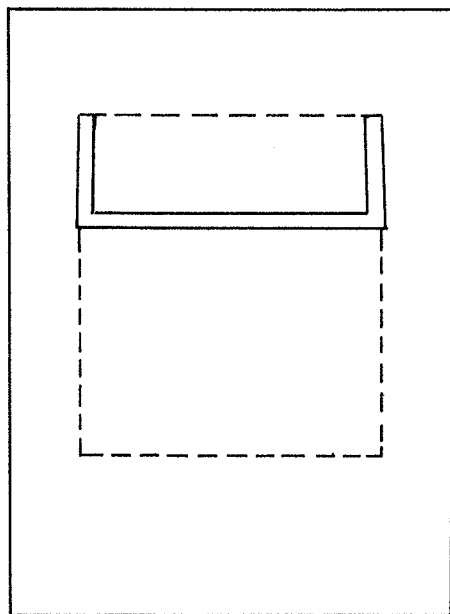
Stop with carriage at right side. Push left side needles back into C-position. Knit to left. Push right side needles back into C-position and continue knitting main piece over all needles for 20 rows. Cast off.

Sew pocket together at side seam and overstitch each corner with a few grafting stitches if necessary.

If pocket is at bottom of garment, it is a good idea to calculate the length of the pocket sack so that it can be attached to bottom seam.

SLIT POCKET WITH FLAP

EXERCISE #2



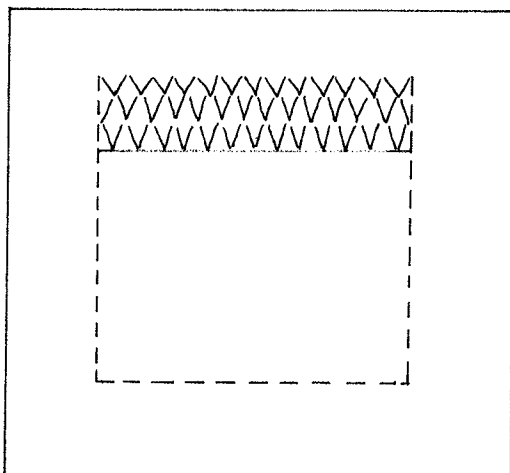
Knit pocket same as Pocket #1, but add rows for double length of flap. Sew pocket seams together at inner edge, same as Pocket #1. Then pull out flap part to right side. Sew or

crochet around edges and fasten at top with either invisible slipstitches, or grafting stitches, or sew with step stitch in place.

If crochet edging is used, it is best to alternate 1 single crochet and 1 chain stitch, to get an even border. Watch corner! Put 1 single crochet, 1 chain and 1 single crochet into the same corner stitch. Repeat if more than one row is required, always going with the single crochet into the chain stitch of the past row.

SINGLE POCKET

EXERCISE #3.

Flat Single Pocket

First prepare pocket.

Cast on 26 st. and knit 36 rows.

Take off on contrast yarn and put

aside. Now cast on 50 st. for

main piece and knit 50 rows. The

26 center stitches are the "pocket stitches". Since we do not knit a

facing, we have to finish the pocket with a little edging.

Therefore pull every other needle of those 26 "pocket stitches" into D-position, front levers at I, knit back and forth (row 1 and 2): Now push all needles back into working position and knit row 3 and 4 back and forth over all needles. Again pull every other pocket needle into D-position, but alternated.

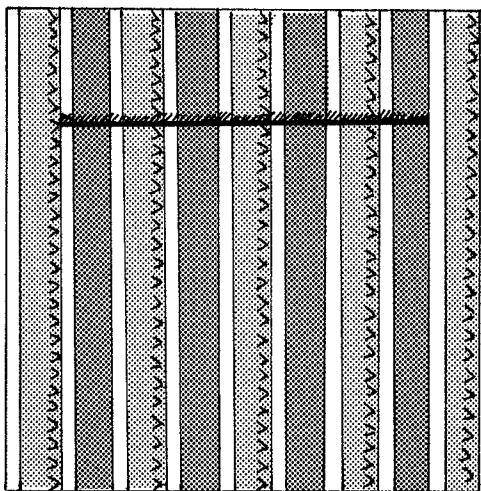
These are rows 5 and 6.

Knit back and forth. Then knit row 7 and 8 over all needles, same as row 3 and 4. Knit row 9 and 10 as row 1 and 2 and row 11 and 12 as row 3 and 4. Row 13 and 14 as row 5 and 6.

Cast off 26 pocket needles with separate yarn and at the same time put the prepared pocket onto the empty needles. Knit 20 rows over all needles and cast off.

Slipstitch pocket from inside invisibly in place or baste and sew on with small backstitches at right side. The corners usually need some overstitching or grafting afterwards, because the little slits seem to be unavoidable.

VARIATION OF A SLIT POCKET



EXERCISE #4

Pockets, Knitted into a Sideways Knit.

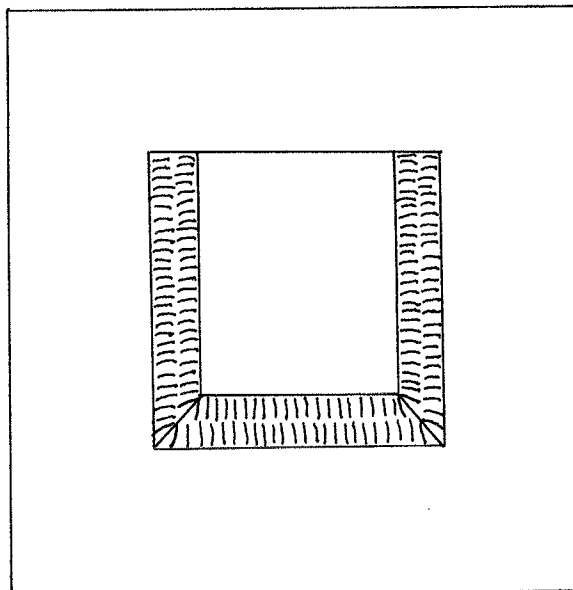
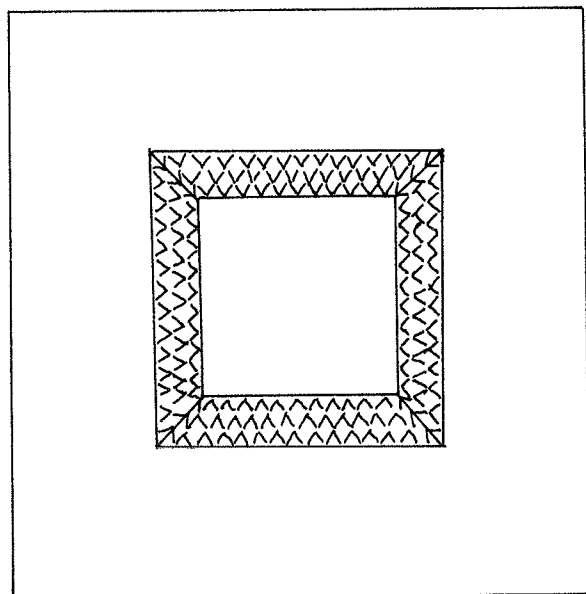
Cast on 70 st. and knit in a stripe pattern (any stripe you like). 20 rows. Take off 50 stitches from left side on contrast yarn. Cast on, at same side, 30 new stitches (for back of inside pocket) and knit 48 rows, continuing the stripe pattern. Cast off the 30 new stitches, put the 20 remaining stitches at right side on waste yarn and drop.

Now, put the 50 stitches at left back to machine. Cast on 30 new stitches at right side (for pocket facing) and knit, matching the stripes for 48 rows.

Cast off the 30 new stitches. Put the 20 stitches at right side back to machine and continue knitting for another 20 rows. Cast off.

Sew pocket seams together and connect with hemline (a 10 stitch hem).

PATCH POCKETS



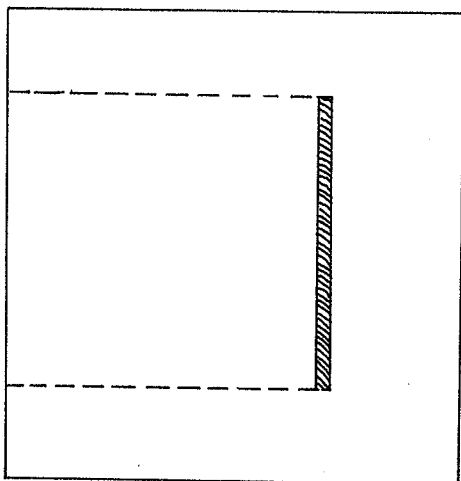
EXERCISE #5

Knit squares in wanted size and crochet edging around, either around all 4 sides, or around sides and bottom, with a hem at the top.

It is very important to get the corner precise. If edge is done in single crochet, one has to put 3 single crochets in the same stitch at each corner. If edge is done in alternated single crochet and chain stitch, one has to put 1 single crochet, 1 chain stitch and another single crochet into the center corner stitch, thus increasing each row at each corner to form a perfect 90° angle.

Only one sample has to be knitted.

VERTICAL SLIT POCKET



Exercise #6:

Cast on 60 st. Knit 30-40 rows.
Take left 40 st. off on contrast yarn, by putting main yarn behind machine, pulling the first 20 needles at right into D-position (lever on I) and knitting 4 rows on contrast and drop. Push empty

needles back into A-position. Rethread machine and knit the 20 needles to left side, wind another 40 st. on and knit 60 rows over all 60 needles. Carriage is at left. Cast off the 40 st. and take the 20 remaining st. off on contrast yarn.

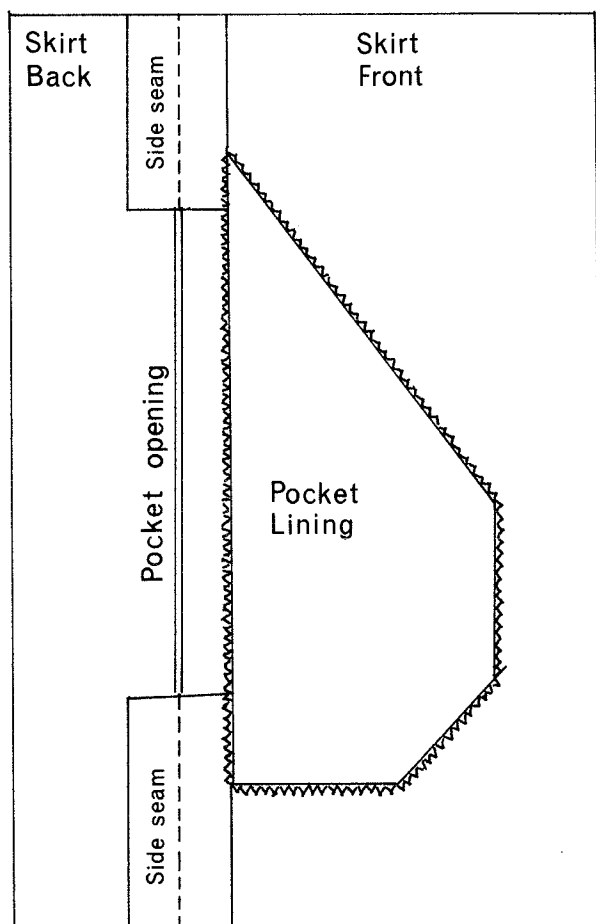
Put the first 40 st., still hanging on contrast yarn, back to machine and add at inner side (on our sample, the right side) another 40 st.

Knit 60 rows, cast off those 40 st. and put the 20 st. from contrast yarn back to machine. Knit 20 st. from contrast yarn back to machine. Knit 20-30 rows, cast off, steam and sew pocket sack together. Crochet 1 row of slip stitch over pocket fold.

If side pockets are in a cardigan, attach them to the front facings. If it is in a long sweater, they should be attached to each other. If the pockets are in a skirt, one can knit or crochet a small band and fasten it to the waist.

One can also knit an inner pocket facing only and make the pocket itself from lining.

STANDARD SIDE SEAM POCKET



Exercise #7: (actual size)

We start with the 2 "skirt pieces" because we need a side seam in order to put the pocket in.

Front Skirt Piece: Cast on 50 st. Knit 140 rows. Cast off.

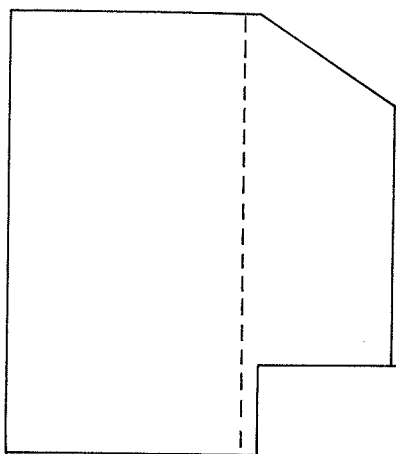
Back Skirt Piece: Cast on 50 st. Knit 38 rows. Cast off 4 st. while knitting to left. Knit back to right side and wind 4 st. on again (row 40). This creates a "notch" in the seam allowance, which is essential for the construction. Knit 60 rows (row 100). Create another "notch" (row 102) and knit 38 rows, (row 140). Cast off.

Pocket lining: Cast on 24 st., knit 20 rows, increasing one stitch every other row, on right side. Knit 30 rows straight (row 50). Knit 60 rows, decreasing one stitch every other row on right side, (row 110). Cast off the last 4 stitches (tight).

The 2nd lining piece is knitted the same way, only reversed (the increase and decrease occur at the left side).

Construction of Standard Side seam pocket: Zig-zag corresponding pocket lining to skirt front, 5 cm from bottom of sample. Line up the other pocket lining with skirt back and zig-zag pocket lining to skirt back extension ONLY (between the notches). Lay flat and zig-zag both pocket linings together around outline. Sew side seam, leaving opening for pocket (between notches).

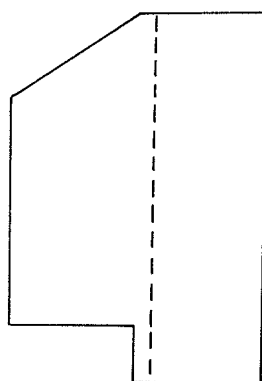
SIDE SEAM SLIT POCKET



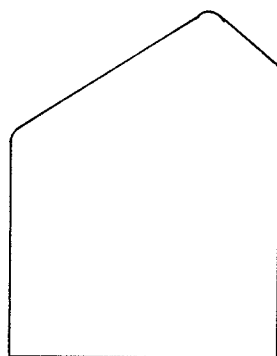
Exercise #8: (actual size)

We start with the 2 "skirt pieces" because part of the pocket is knitted as an extension to the side seams.

Skirt Front and Pocket Extension: Cast on 45 st. Knit straight for 20 rows. Cast on 28 new stitches to right side. Knit straight for 56 rows (row 76). Decrease on right side, alternating 2 stitches, then one stitch every other row, for 42 rows. (Row 118). Cast off.



Skirt Back and Pocket Extension: Cast on 30 st. Knit 20 rows. Wind on 14 st. on left side. Knit straight for 76 rows, (row 96). Decrease on left side, alternating 2 st., then 1 st. every other row for 22 rows (row 118). Cast off.



Pocket Back: Cast on 50 st. Knit 50 rows straight. Start decreasing on the left side, alternating 2 stitches, then 1 stitch every other row for 20 rows (row 76). Now, decrease on right side as well, following the same rhythm of 2 st. alternated with 1 st. every other row, for 22 rows (row 118). Cast off.

Finish: Sew side seams approximately 10 cm from bottom and 4 cm from top, leaving 15 cm open for pocket opening. Bast front and back pocket extensions in seam line. Press seams open. Line pocket back up with pocket extensions and zig-zag it on flat, stopping at side seams. Finished pocket can be top-stitched by hand.

HOW TO CUT A POCKET INTO A KNIT

How to Cut a Pocket into a Knit of an already finished garment:

Mark the spot where you want the opening. Cut one stitch in the middle of that designated row. Peel the row, stitch by stitch - both sides of the cut stitch - out to the marked end spots of the opening, leaving the stitches on both sides of the slit open. Do NOT cut the peeled out thread but fasten it carefully later on.

FOR A VERTICAL POCKET IN A GARMENT WHICH IS KNITTED SIDEWAYS:

On our sample we have 35 st. open; we put the stitches of one pocket side back to the machine, including the half stitches occurring at each end. (37 stitches). We wind 10 more stitches on to the top end of our pocket line and 20 stitches at the bottom end (this has to be according to calculation). On our sample a total of 67 stitches.

We knit 4 more rows, then start to decrease 1 st. at the end of the topside of the pocket, the bottom side stays straight, till we have knitted 48 rows. We cast off the remaining 45 stitches. We put the open stitches of the other pocket side back to the machine and knit the second part of the pocket to match.

FOR HORIZONTAL POCKETS IN A REGULAR KNITTED GARMENT:

We will also open up 35 stitches. We put one slit side with open stitches back to the machine and proceed as for the vertical pocket, but knit the whole pocket sack straight down, over 37 st. as long as calculated. Cast off.

Catch the open stitches from the other slit side and knit the second part of the pocket sack exactly the same way.

notes

GORES AND RUFFLES

1. We are going to knit inserted wedges or gores between straight sections of fabric to widen it in certain areas. We achieve this with short rows, as described on Page 109. This method is especially useful for circular and semi-circular skirts, which are knitted and constructed sideways.
2. One knits the whole skirt in one piece, starting with an open cast-on in contrast yarn and grafted together completely invisibly, open stitch to open stitch (take off on contrast yarn). See horizontal grafting, page 26.
3. For the construction, one would take a straight piece of pattern paper, the width as at 10 cm below the waist, slash it in as many sections as desired (not less than 6 or 8) and open it up to the required width. See also "calculation of gores", Page 113.
4. We knit sideways. This means our stitches become the length of the fabric, the rows become the width. Unfortunately we are limited in our length, because we have only 200 needles to work with, which will give us, depending on our gauge, between 65 and 75 cm. See Exercise #1, Page 109. If that is not enough for the length, one has to design around it, by adding a yoke or a bottom border.
5. We use the same method also for all kinds of ruffles, only constructing the gores closer to each other and shorter. See Exercise 2, Page 110.
6. As a variation on the inserted gore, we can also use a chevron type increase. The basic calculation would be the same (see page 116). For the technique, see exercise #3, Page 111.
7. Finally, one can combine both methods by inserting the gores but also flaring out the "straight" sections for optical illusions. See Exercise #4, Page 112. This makes a perfect flair.
8. See also "tapered pleats", page 254

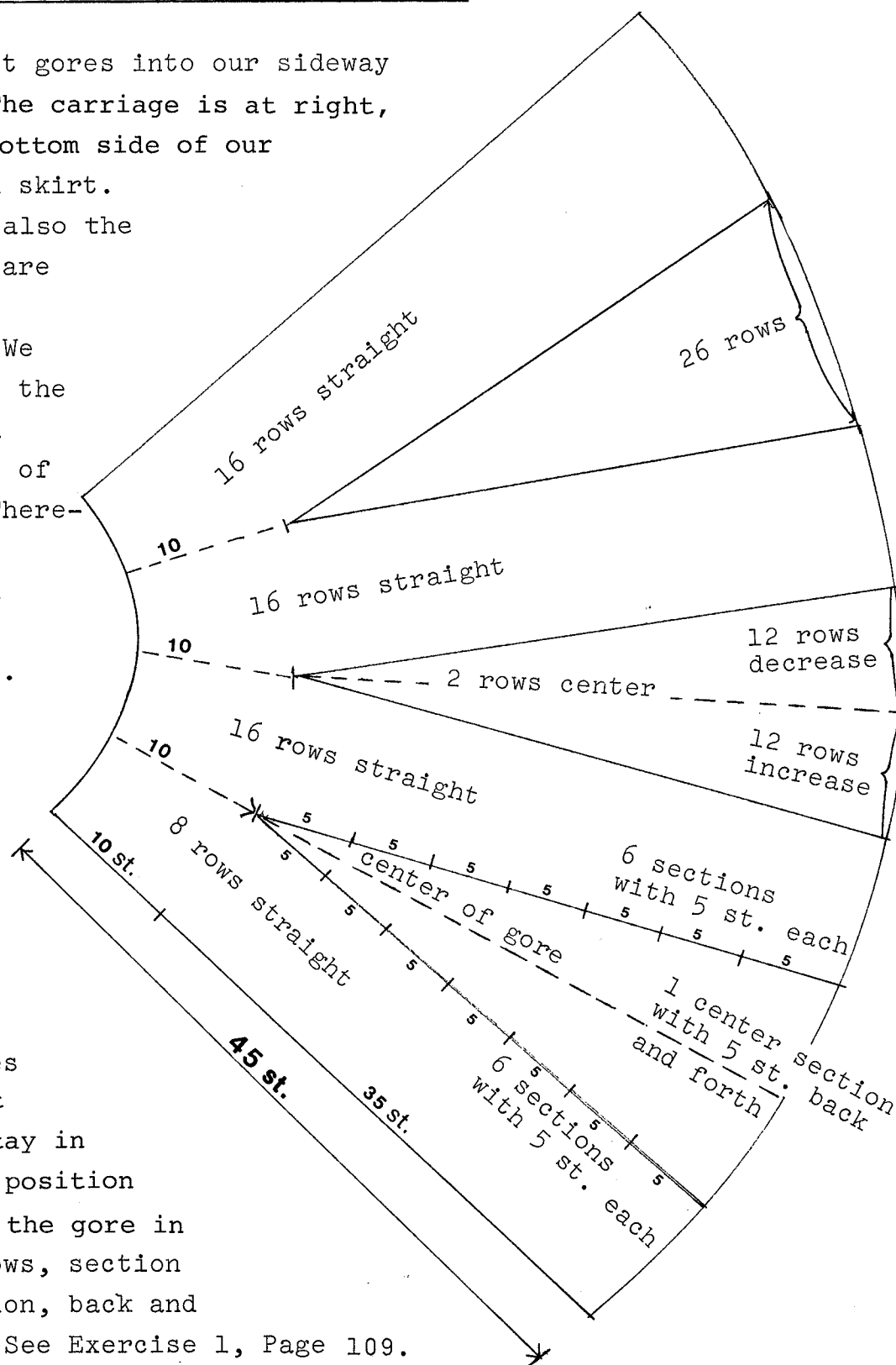
GORES WITH SHORT ROWS

For Circular Skirts, Yokes or Ruffles.

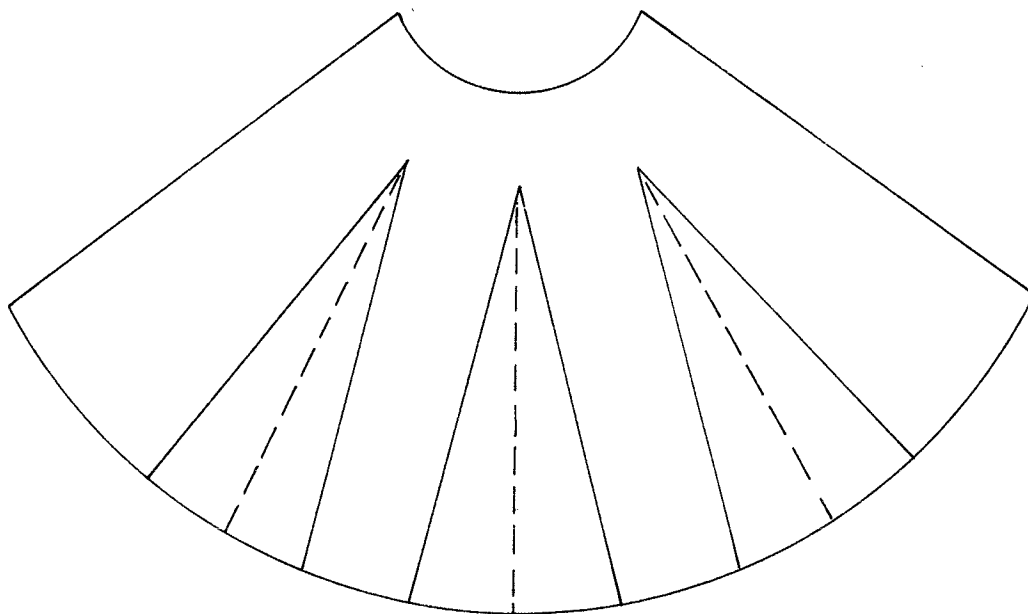
We insert gores into our sideway knit. The carriage is at right, at the bottom side of our presumed skirt.

This is also the side we are going to widen. We increase the width in sections of 5 st. Therefore, we pull all needles to D-pos. except the

first 5 needles at right which stay in working position. We work the gore in short rows, section by section, back and forth. See Exercise 1, Page 109.



GORES, METHOD I



Exercise #1: Cast on 45 st., knit 8 rows. We knit our gore over 35 needles, in sections of 5 st. each. The gore has 26 rows.

Pull all needles but the first 5 to D-position (front levers on I). Knit back and forth, wrap the yarn under the closest needles in D-position, before returning, in order not to get a hole. Pull 5 more needles to C-position. Knit back and forth and continue this till only 10 stitches are left, at the waist band side.

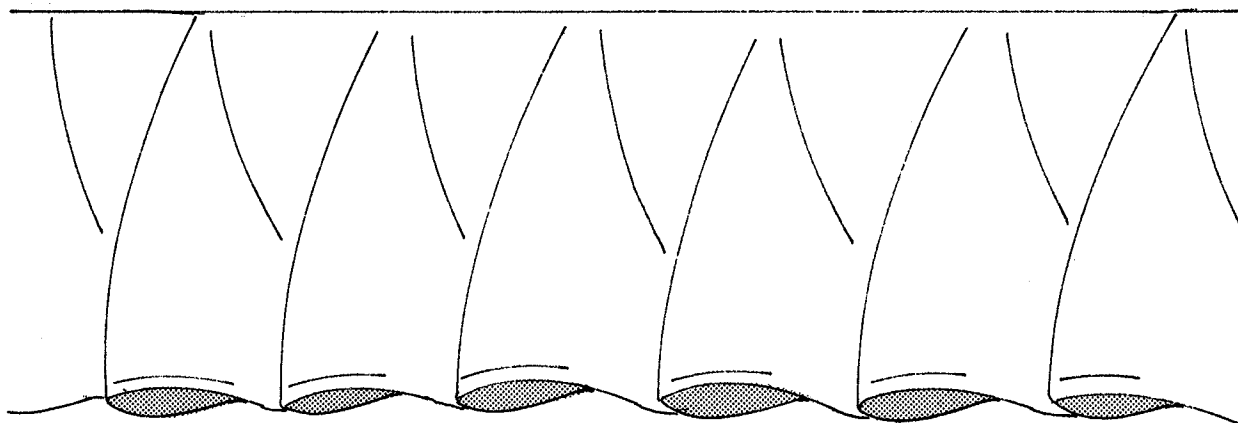
This is the 14th row of our gore, and at the same time the center row of it. From now on, we pull the needles 5 by 5 back to D-position till we have 5 needles left.

Put front lever to II for the next row only, knit 16 rows straight over all needles, including the 10 top stitches and repeat for the next gore.

Knit 3 or 4 gores, end with 8 rows straight and cast off.

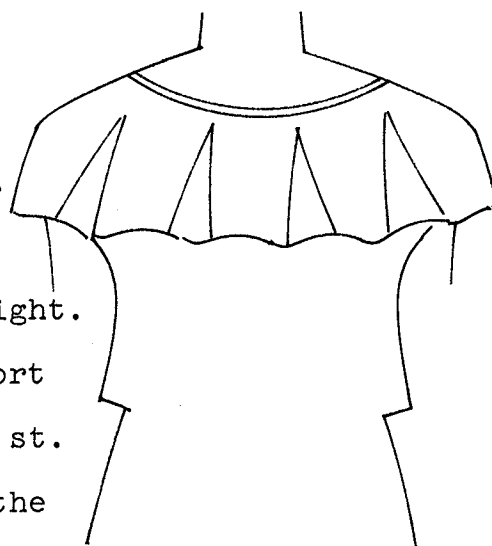
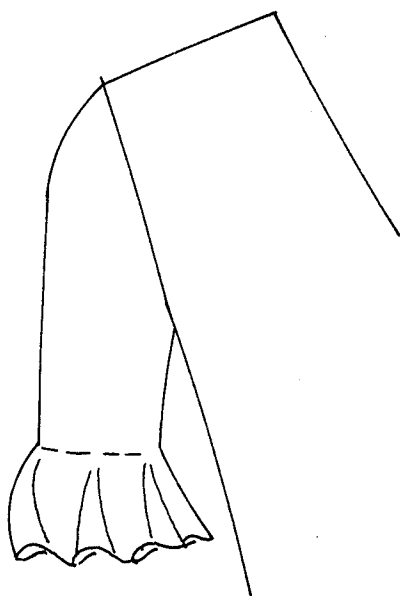
Steam.

RUFFLES WITH SHORT ROWS



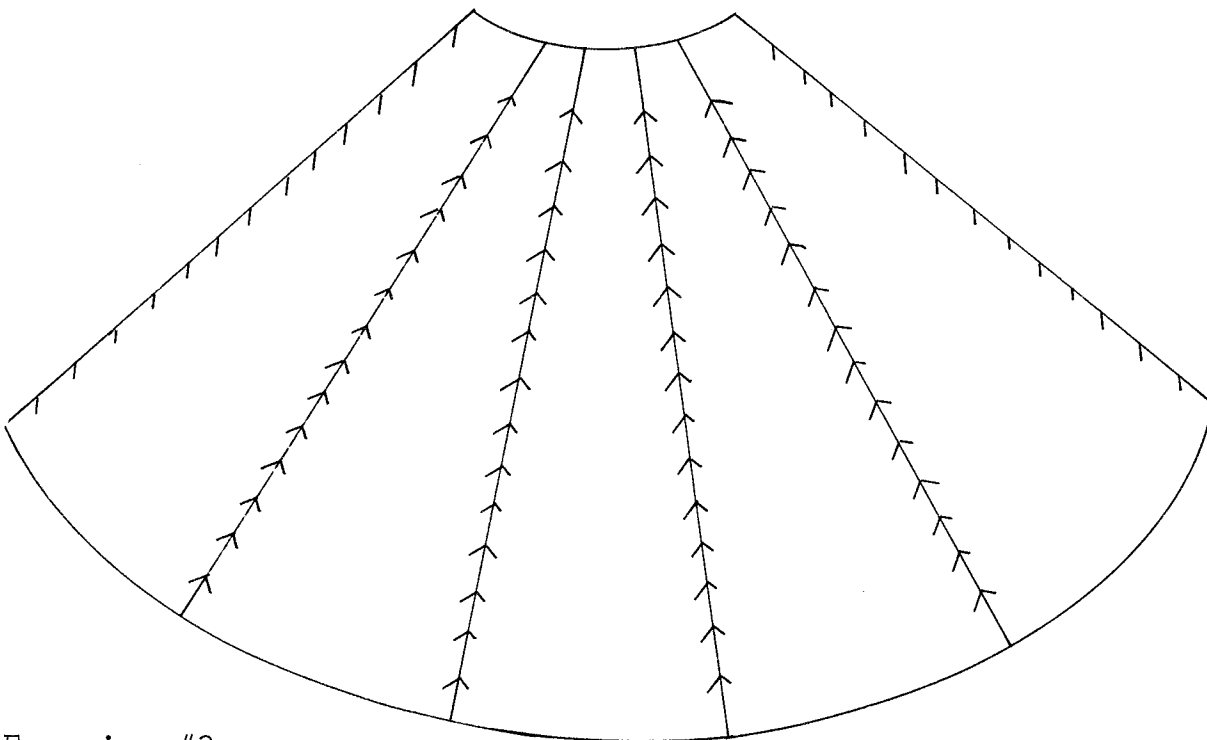
Exercise #2:

Knitted Sideways
with little gores.
Start with 28 st.
Knit 10 rows straight.
Knit gore with short
rows, putting 6x4 st.
in hold, leaving the
last 4 st. as center
of gore. Pull 6x4 st.
back to work. Knit 10
rows straight and
repeat gore. (10 times
at least).



VARIATION OF A GORE, METHOD II

Flares with chevron type increase.

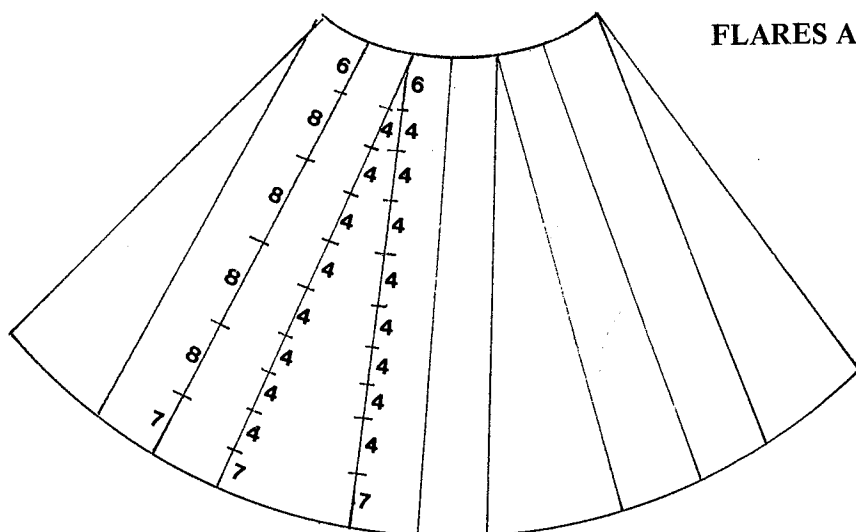


Exercise #3:

Cast on 45 st. Knit back and forth. Pull out the first 5 stitches at left to D-position. Knit back and forth. *Pull out the next 5 st. at left into D-position. Knit back and forth. *Repeat till 5 st. are left at right side. Repeat that last short row again. From now on push 5 st. each time back into C-position, starting from right back to left, always knitting back and forth in between. Repeat till all needles in D-position are used up. Knit 10 rows plain stockinette over all needles, then start another panel.

For variation, change colours in stripes of 2 or 4 rows, which gives a chevron effect. Experiment with it for different effects.

FLARES AND GORES COMBINED



The 6 gores of the skirt alternate with 6 "straight" panels, which, for optical reasons, also have to flare out a bit.

Exercise #4: Cast on 45 st. with contrast yarn, knit 4 rows.

Start "straight" panel of skirt, knit 4 rows. Pull out at left side *the first 6 st. into D-position. Knit with short rows, adding 4x8 st., leaving 7 st. at right. Then reverse, knit the 7 st. again, then put 4x8 st. back into working position, doing short rows. Knit 8 rows straight, over all needles.

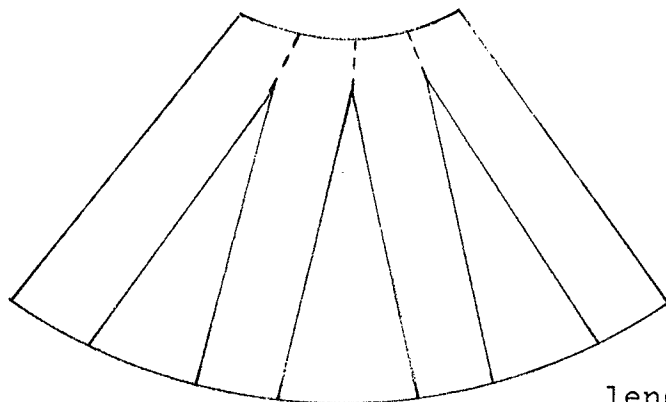
Start gore: pull all needles but first 7 at right into D-position, knit with short rows, always putting 4 st. back into working position, till 6 st. are left. Then reverse, adding 4 st. to D-position till 7 st. are left.

Knit straight panel again, consisting of 8 rows straight.

8 short rows for center flare, 8 rows straight.

Repeat *till 4 gores are completed. Add 4 rows straight and take off on contrast yarn. Block and close "skirt" with grafted seam.

CALCULATION OF GORES



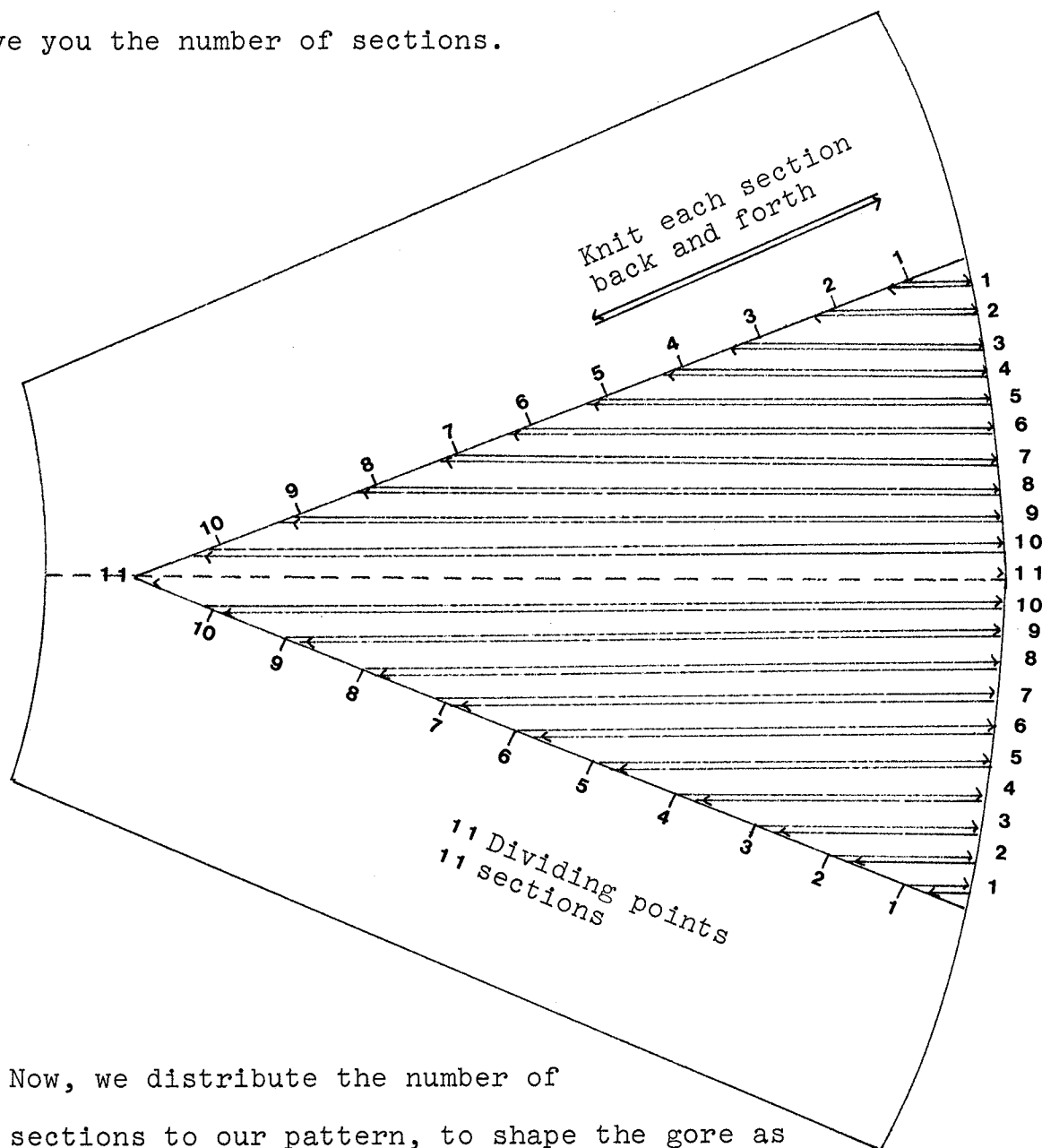
1. Calculate your gauge first with same wool and same tension to be used for garment. Then calculate the amount of stitches used for the length of skirt including waistband and hem.

2. Now, take measurements of straight or top part of skirt and calculate how many rows are needed for that part (total width of skirt at the point where we start the gores), usually about 10 cm down. Divide that amount of rows by the number of gores wanted, and you will know how many rows of straight knitting are between each gore.
3. For the gore part, take first the measurement of a single gore at bottom (widest part) and calculate how many rows are needed for that part. Divide that amount by 4 and get the number of sections needed. (One pair of rows, back and forth each side of the gore for each short row section). Since we need ONLY ONE SINGLE PAIR of rows for the top point of gore, center rows, we either deduct those 2 rows in our calculation, or add them whatever is more convenient. (One does NOT have to be too particular, because this calculation is only approximate and it does not matter if you have a couple of rows more or less in the gore.

Calculation of Gores, continued

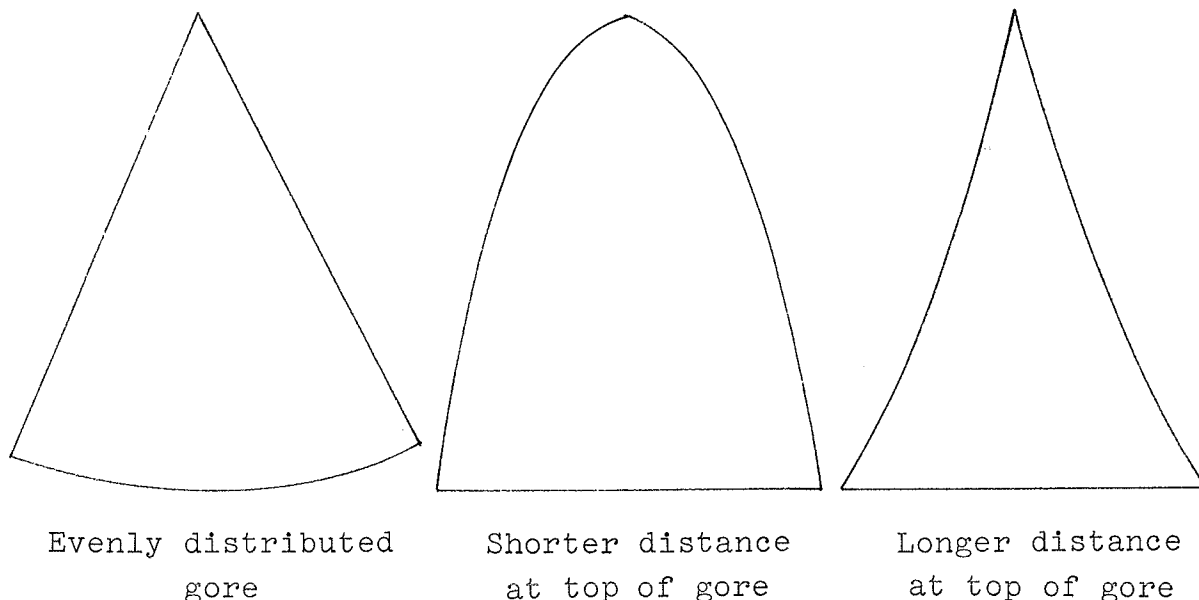
We end up with as many sections as we have dividing points.

Again the number of rows needed for the gore is divided by 4 to give you the number of sections.



4. Now, we distribute the number of sections to our pattern, to shape the gore as wanted. In other words, we calculate the distance, or the amount of stitches between each pair of short rows. Usually one distributes evenly over the whole length of the skirt, with the same amount of stitches for each section.

Calculation of Gores, continued

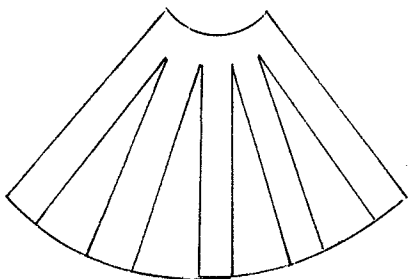


For special effects one could add more width right at the top of the gore, or at the bottom, to create some kind of a new shape. Fashion is changing all the time and we have to fit our pattern in accordance.

5. For the evenly distributed gore, we divide the amount of stitches in the length of our gore by the number of sections. But first we deduct from our skirt length (the stitch calculation) approx. 20 st. at the top for the straight part of the band, and approximately 20 st. at the bottom part for a small hem. Here we can adjust a little. If our calculation comes out in a fraction, we simply add the extras to the hem part section. The amount of stitches left, after deducting for waist band and hem is the actual length of our gore, which we divide by the number of sections, to find out how many stitches are used for each short row section.

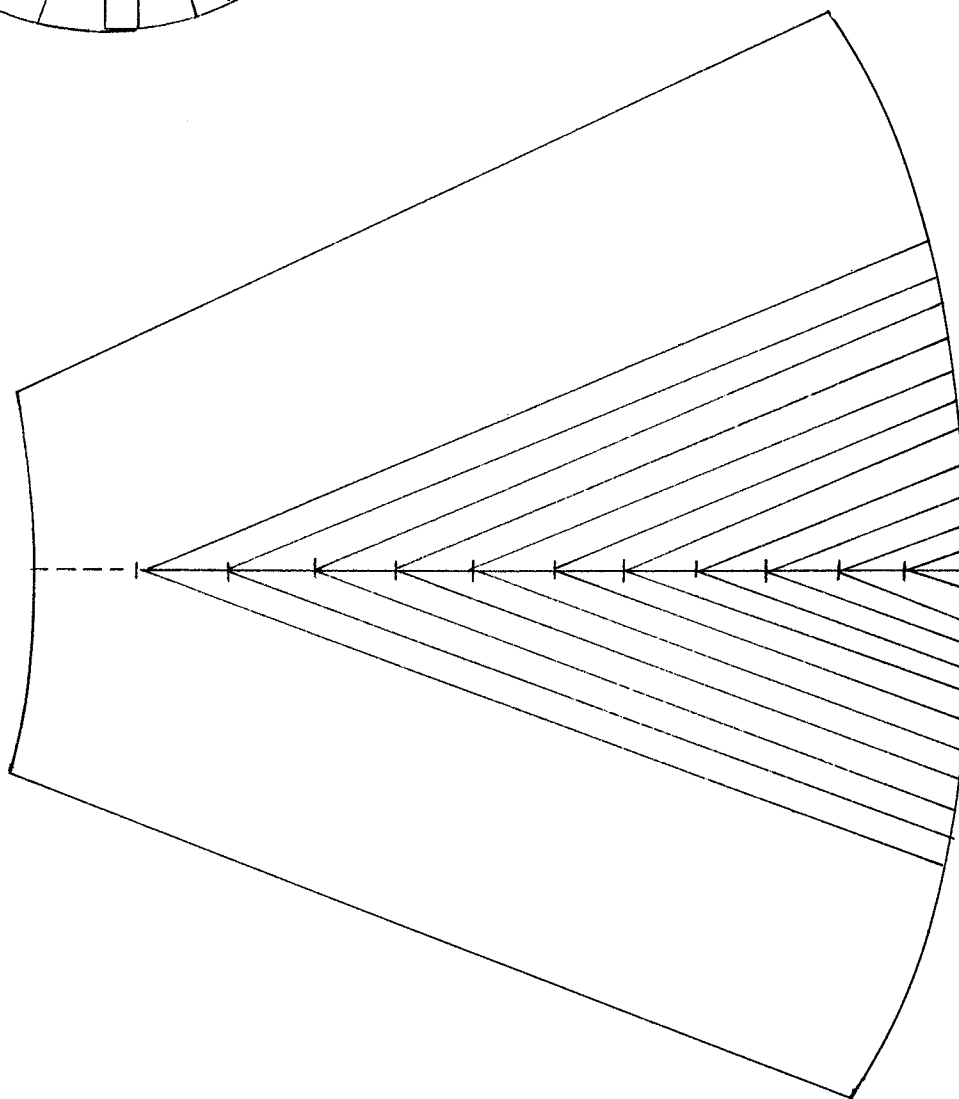
Calculation of Gores, continued

The gores we have just calculated are like wedges, knitted into the skirt width to widen the bottom of the skirt.



We are now doing a variation of the gore.

Instead of wedges, we are inserting chevron parts, where the short rows do not shape the outside of the wedge, but come to ONE point

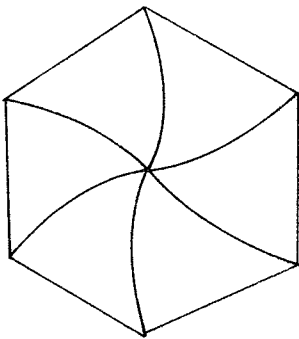


at the center line of each gore. The calculation remains exactly the same. See Exercise #3, Page 111.

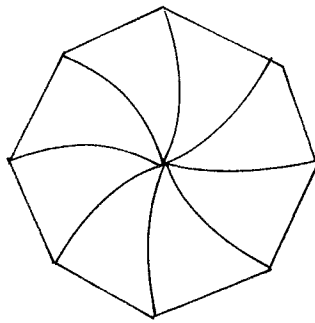
notes

CIRCULAR FORMS – KNIT A TAM WITH SHORT ROWS

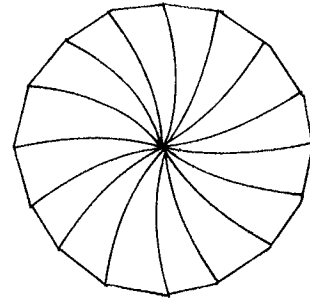
1. In the same manner as we have knitted circular and semi-circular skirts, with inserted gores, we can knit a tam.
2. We construct first the flat, round shape in 16 sections. Why 16? The more the better, because the shape gets more rounded that way. If we have 8 sections, for instance, we end up with an octagon. 16 sections make it fairly round. We construct the sections this time not "pie-shaped", as for the skirt, but in the shape of



Construction
with 6



Construction
with 8



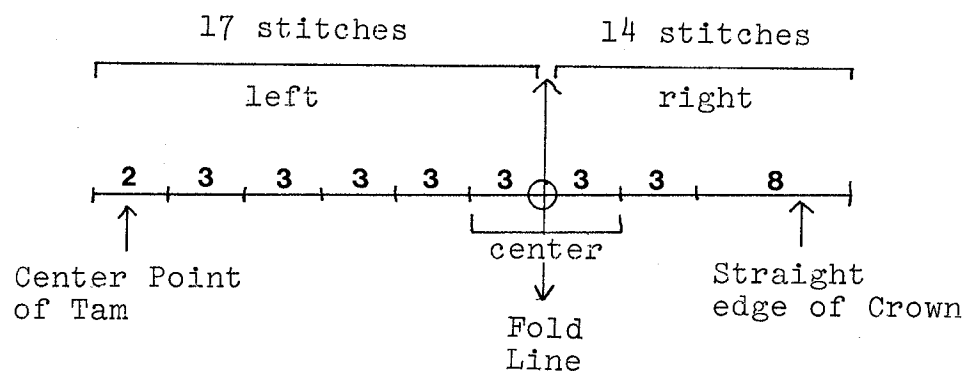
Construction
with 16

spirals. This way, we have to knit our "short-row sections" only in one direction.

3. The sections form a perfect flat circle. We close the tam with a horizontal graft. Therefore, we cast on with contrast yarn and take off on contrast yarn also, to be able to graft open stitches to open stitches.

Knit A Tam (continued)

4. One could knit the tam in 2 flat pieces and graft them together at the edge, but it was a challenge to me to find a way to knit it all in ONE piece. See the diagram:

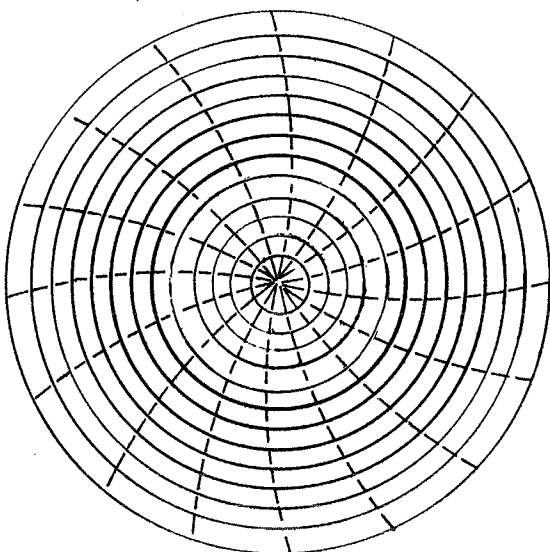


5. It is very important to watch the center-0-mark, while you are casting on. The first 3 stitches each side of 0 form the straight fold part of the tam, dividing the top part at left and the bottom part right of 0. Those 6 stitches are always knitted.

The left part is decreased with short rows in sections of 3 towards the center point of the tam, while the right part is only decreased to the edge of the crown, which then forms a straight band.

6. Knit the exercise for the mini-tam and see for yourself (Page 120)
7. To enlarge the construction for knitting a bigger tam, we still follow the basic principle of 16 sections, decreased in short rows, each time by 3 stitches, to form a flat circle. We only use more stitches, adding in the relation of 3, to stay in the same basic construction. (Page 121).

MINI-TAM

Knitted in One Piece with Short Rows

Exercise:

Cast on 31 st. with contrast yarn (17 st. left of center-0 and 14 st. right of center-0). Knit 4 rows. Start with main yarn. Knit back and forth, carriage is at right. *Pull all needles at left, except for the first 3 st. left of 0 into D-position. Knit to left.

Pull all but the first 3 st. right of 0 into D-position. Knit to right. Continue knitting with short rows by adding alternated 3 stitches to each side until we have 8 st. remaining at right side. Add the next 3 st. at left to working position. Knit to left. Now pull all 8 st. at right into working position and knit to right. Continue knitting the short rows at left side; knit straight at right till 2 st. remain at left. Leave the 2 needles in D-position knit to right and repeat from * for next gore. See the diagram Page 119.

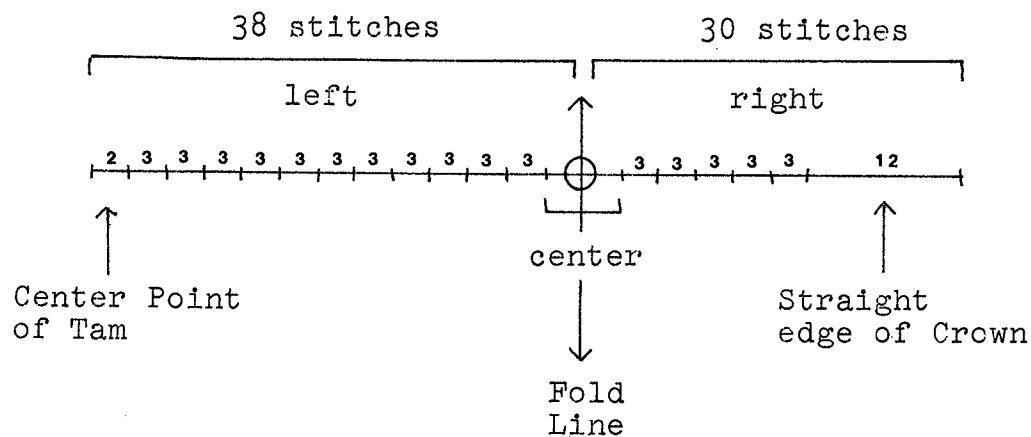
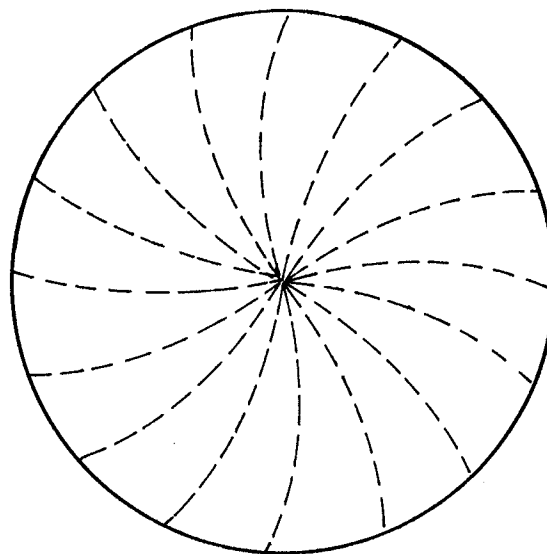
If too many stitches have accumulated at 2nd needle from left, knit them in once in a while.

Knit 16 gores. Take off on contrast yarn. Steam straight edges and graft tam together. Fold inner edge to a little band and slip stitch in place.

Steam the whole Tam.

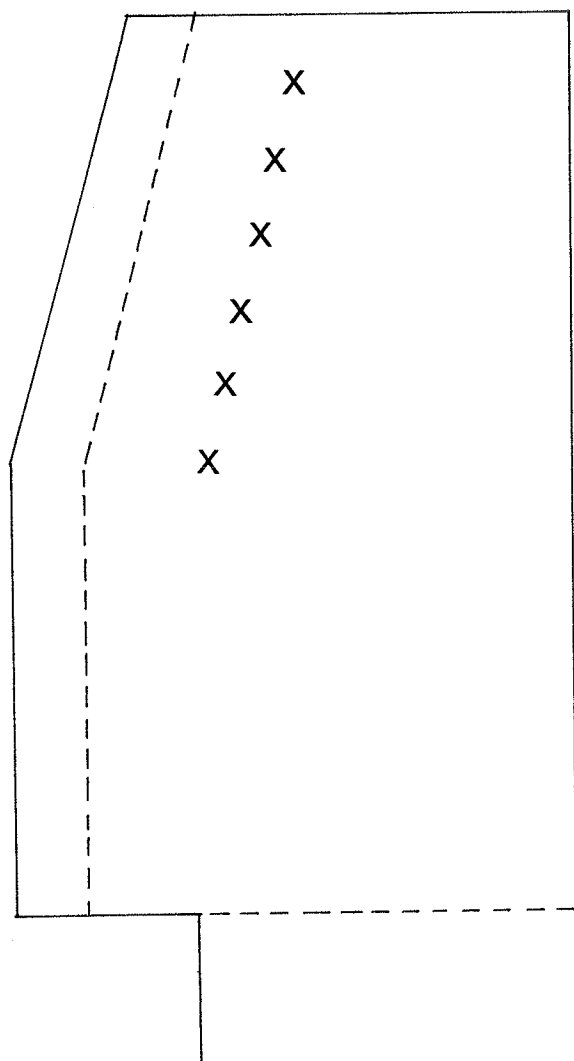
CONSTRUCTION OF A TAM

For a tam approximately 28 cm in diameter with 4 ply wool, gauge 14 st. 20 rows = 5 cm, we cast on 68 stitches, 38 left of center 0 and 30 right of center 0. The construction would look like this:



8. If one wants the shape of a tam more "balloon-like" instead of "pancake-like", one has to leave approx. 9 - 12 st. on both sides of 0 straight, before starting the decreases with short rows. One then starts with those 9 or 12 stitches each side of 0 in working position and continues the short rows as before in sections of 3 stitches each. If necessary, one can add 3 or 6 stitches on both sides of 0, depending on how high the shape is wanted. But it has to be tried out according to fashion and taste.

FRONT AND BOTTOM FACING

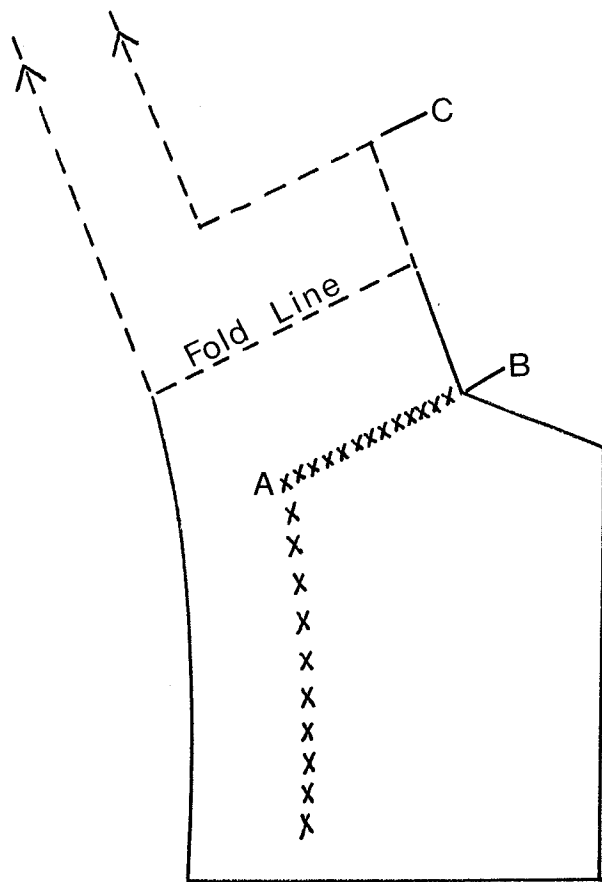


This is the bottom-corner you will use for many of your sweater coats, combined with a V-neck shaped facing.

Exercise: Cast on 30 st. Knit 20 rows. Cast on an extra 20 st. by winding around the needles. Knit 40 rows. Start decreasing fully-fashioned, 1 stitch at a time, 20 stitches inwards for the V-neck line, every 4th row. Decrease 6 times. Cast off. Steam.

Sew facing at bottom together on wrong side, catching every stitch loop. Turn corner and graft hem to facing by using the vertical graft stitch. In this case, pull just the edges together, so that they meet, to avoid a bulky seam.

Steam bottom corner very thoroughly.



for standing collar or band.

Exercise: Cast on 40 st.

Knit 10 rows straight.

1.) Increase 1 stitch at a time fully fashioned, 15 st. inwards every 4th row, leaving the 15 outside st. like a straight band. A total of 10 times (row 46). Knit 4 rows. We have 50 st. and are on point "A".

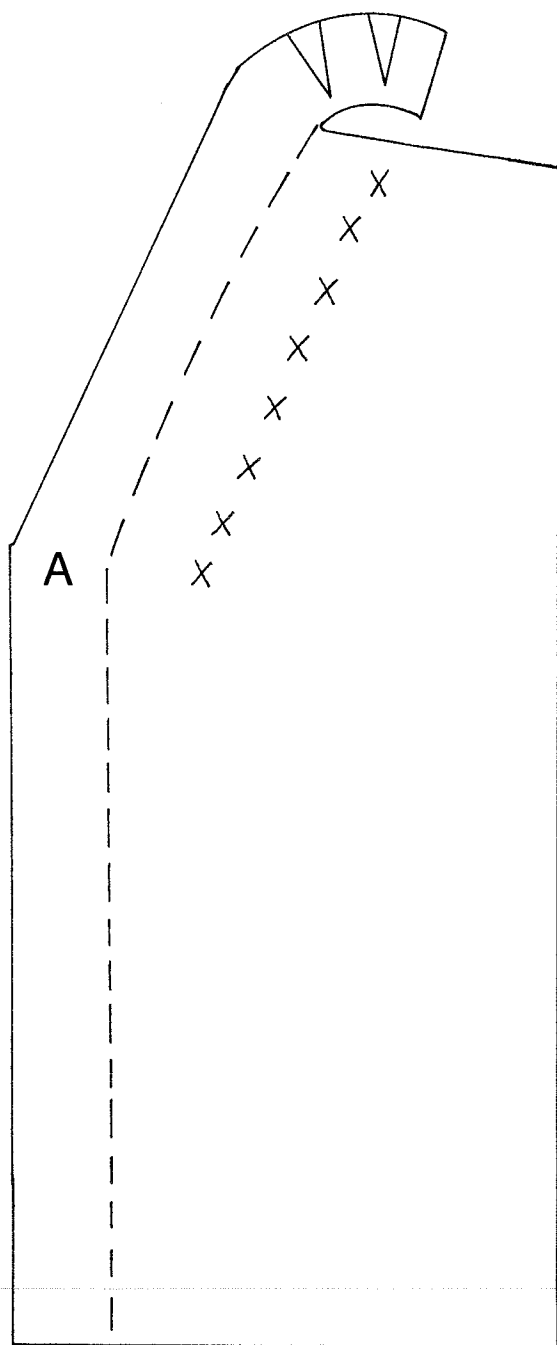
2.) Form neckline through short row method starting with the 15 facing stitches pulled into D-position (row 50). Knit back and forth. Increase the D-position needles by adding one

stitch (inside) every other row, until we have 24 needles in D-position. (Don't forget to wrap yarn under inside D-position needle.) Start shoulder on right side at row 70, casting off 4 st. at a time, also every other row. Continue neckline decrease, till only 1 st. is left (row 80). Pull last st. to D-position. You are on point "B".

3.) Knit neckband or collar over all 30 needles, as long as wanted (double the length for turning back), but at least for 30 rows. You are at point "C". Cast off all but the 15 front stitches very loosely or put them on contrast yarn to be grafted to neckline later on. Continue knitting the front facing over 15 needles to match sample (50 rows). Steam sample.

4.) You can sew the facing to the front band from the inside, or graft from the outside. But the neatest finish is, to put the stitches of the front band and facing together back to the machine, facing side up, showing the knit side. (you have 2 st. on each needle). Knit ONE ROW over all needles with looser tension than garment. Cast off.

FRONT FACING PROLONGED AND CURVED AS BACK FACING



To curve the back facing, we insert little wedges with short rows (see page 125).

Exercise: Cast on 50 st., knit 40 rows.

On facing side decrease 24 st. inwards, one stitch every 4th row. The facing remains straight, 24 st. all the way, while the "armhole" side is decreased through the V-neck shape. Decrease 10 times, then cast off 28 stitches for shoulder (12 facing stitches should be left.)

If you need seam allowance for the facing, increase 1 st. at the

inner side. Knit back and forth and increase another st. (2 st. for seam allowance). Knit 4 rows straight then start the "wedges" for the bend of your facing. ...continued

Front Facing, prolonged and curved (continued)

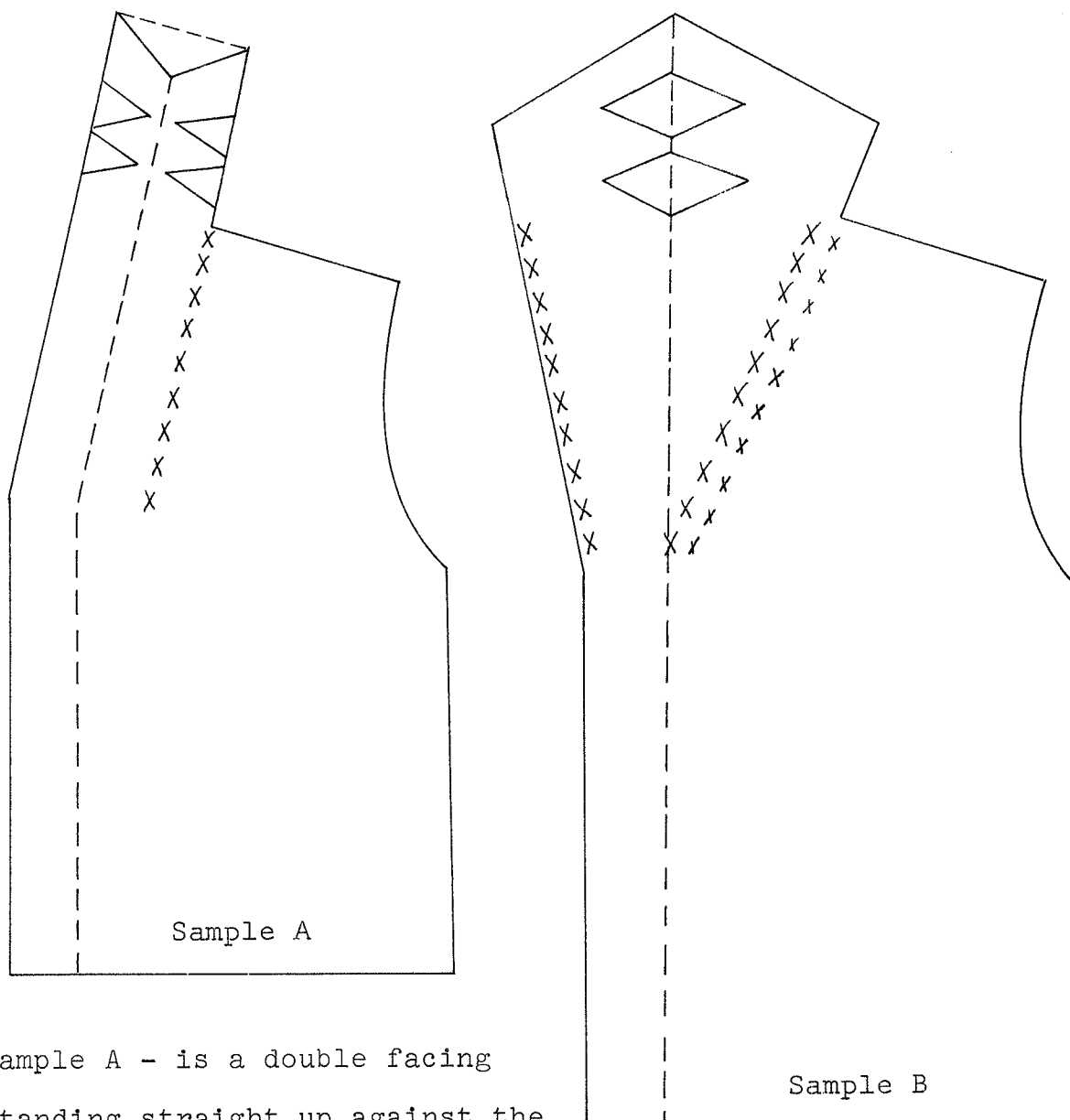
On the outside edge of the facing, pull all but your first 4 needles into D-position. Knit back and forth (short rows, front lever on I, yarn wrapped under last needle). Put the next 3 st. into C-position. Knit back and forth. Again put 3 stitches in C-position. Knit back and forth. Now we are completing the little wedge by returning. We pull 3 stitches back into D-position. Knit back and forth. Then again, we pull 3 stitches back into D-position and knit back and forth. Now, put front lever to II and knit 4-6 rows straight over all facing needles.

Repeat wedge, then continue facing straight for another 16 rows. Cast off.

Fold facing on dotted line. Corner A is simply steamed down after being basted in place.

If you are knitting a garment, take facing off on contrast yarn. Complete other side, adjust length of facing according to neckline. Graft the corresponding facing pieces together, open stitch by open stitch.

EXTENDED FACING, DEVELOPED INTO A SHAWL COLLAR



Sample A - is a double facing standing straight up against the neck. Both outside edges are widened with little wedges, for a close fit around the neck.

Sample B is a double facing extended to a shawl collar. The collar is widened at foldline with inserted wedges, by a similar method we used for the widening of the tam. The foldline is the outline edge of the collar.

Extended Facing and Shawl Collar (continued)

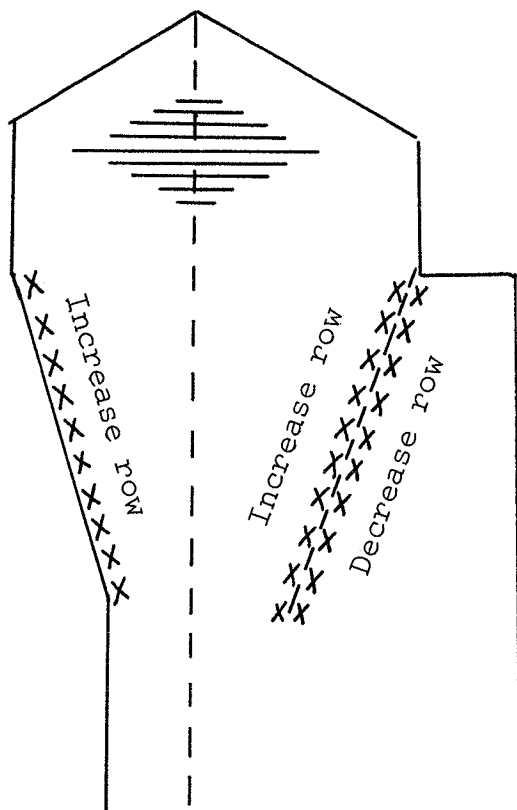
The collar shape itself is a bit tricky, if it is all knitted in one piece. (see diagram next page) The neckline is usually decreased every 4th or 6th row, according to the V-shape of your pattern, fully fashioned a few stitches inwards. We have 2 increases for the shawl collar, one occurs 4 or 6 stitches away from the decrease line (this forms a little straight band), the other one is at the outer edge of the collar. How often we increase differs according to the wanted width of the collar.

For a small shawl collar one can increase at the same row where one has decreased for the V-shape. In this case one has only to transfer the 4 or 6 stitches between decrease and increase, that is to say the "straight band" between the V-shape and the collar.

For a big shawl collar increase every other row, if the decrease is every 4th row, or every 3rd row if the decrease is every 6th row. We alternate then between one "decrease-increase" row as before, and one INCREASE ONLY row, where one has to transfer all the collar stitches. This is quite time consuming, but looks very neat.

If one does not want to spend that much time, one parts the knit at the point where the V-point and the collar start, and knits each part separate, decreasing for the V-shape on one part and increasing for the collar part fully fashioned 2 or 3 stitches inwards. The outside edge of the collar facing can be increased right at the edge. One has to add 1 or 2 stitches seam allowance for each part and graft close to edge later on.

This is a project for an advanced class, to work out the sample by themselves and write short instruction notes.



Cast on 45 st. (25 right and 20 left of Centre 0). Knit 20 rows. From now on, we are developing the shawl collar to the left side of our sample, while we are decreasing at the same time for the V-neck.

Transfer stitch 24 from right side to needle 25 and immediately transfer both stitches back to needle 24. Needle 25 is empty. Transfer the next 4 st. to the right. The empty needle is now needle 29. Increase one stitch by picking up the horizontal bar below needle 30, putting it on to needle 29. Pull out one empty needle at left side for the outer increase of the collar. Knit 6 rows.

Transfer stitch 23 from right to needle 24 and both together immediately back to needle 23. Transfer the next 4 stitches to the right. Increase the stitch for the empty needle. Also

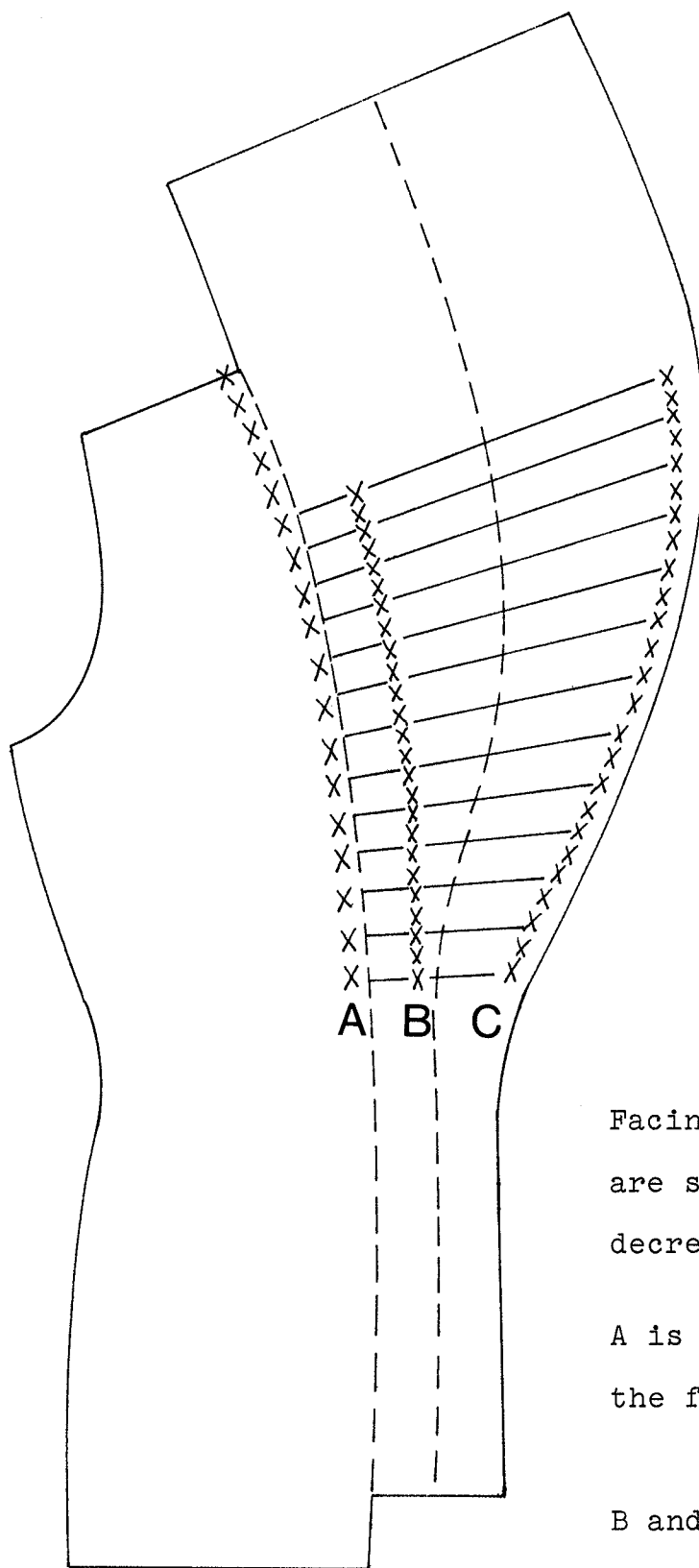
increase one needle at left outside edge. Knit 6 rows.

Transfer stitch 22 to needle 23 and repeat the same proceedings till you have transferred stitch 15. You should have 55 stitches. Knit 6 rows. Cast off 15 stitches at right, leaving 40 stitches for the collar. Knit 10 rows.

We are forming now a pair of wedges to widen the collar at the inside, which is the outer edge of the shawl collar when it is folded over. Push 16 needles at left side to D-position (front-levers to I). Knit to left. Push 16 needles at right side to D-position. Leaves 8 stitches in the centre. We are knitting the wedges with short rows to both sides, similar to the technique used for the tam, wrapping the yarn under the inner needle before turning. Knit the 8 stitches to the right. *Pull 4 stitches at left side to C-position. Knit to left. Pull 4 stitches to C-position at right side. Knit to right. Repeat from* two more times. We have 4 stitches left in D-position at each side. Carriage is at right. **Push the next 4 needles at left side to D-position. Knit to left. Push the next 4 needles at right side to D-position. Knit to right. Repeat from ** two more times. We have again 8 needles in the centre in B-position. Carriage is at right. Pull all needles at left to C-position and knit to left side. The 16 needles at right are still in D-position. Put right front lever to II and knit back to right over all needles. Knit 6 more rows and cast off for the sample.

If one knits a real collar, one takes off on contrast yarn in order to graft the two corresponding collar pieces together at the centre back. How many pairs of wedges one has to insert depends on the calculation. The pair described widens the collar approximately for 3 cm in 4 ply yarn. See also next page.

BIG SHAWL COLLAR



Facing and shawl collar
are shaped by fully-fashioned
decrease and increase.

A is the decrease line for
the facing.

B and C are the increase lines
for the double shawl-collar.

NOTE: You have the double amount of increases, as compared to
the decreases.

notes

KNITTED DARTS

We can knit darts with short rows or work them with transferred stitches. The short row method forms basically horizontal darts or inserted sections, while the dart worked out with transferred stitches creates a vertical arranged reduction or enlargement of fabric.

1. There is first the "bust dart" formed with short rows, which one uses very rarely in today's knits, but nevertheless has to learn. Let's call it a horizontal dart. See exercise #1. Page 131.
2. The 2nd exercise (#2, page 132) is a dart which "turns" the top part of a straight piece of knit so that it can form a hood, by knitting the right and left top sections separately with short rows. After the turn is completed on both sides, we graft the 2 sections together, (invisibly, open stitches to open stitches). This closes the hood in the middle of the head.
3. In the same manner in which we insert gores or wedges to widen a fabric, we can take sections out with short rows and reduce the width. Exercise #3, Page 133.
4. The other method of knitting darts is through transferring stitches; we do that for decreases as well as for increases.
5. Look at the sketches on page 144. Skirt #1 is an A-line skirt, which is decreased in 3 panels. The center section stays untouched on the machine. One knits at each side of the center panel 3 stitches to one needle, as we have done before, and

Knitted Darts (continued)

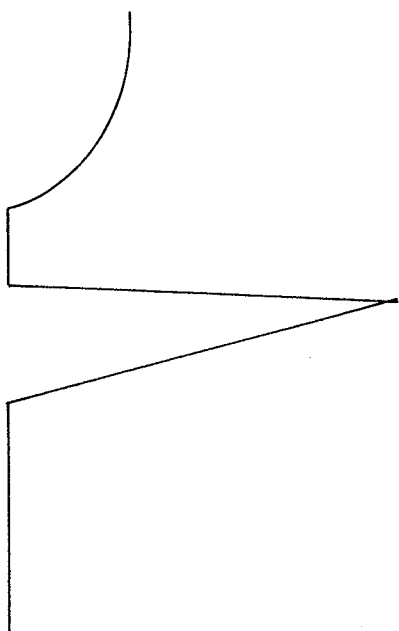
closes the gap by transferring all stitches toward the center. How many rows are knitted between each decrease row has to be calculated. One can leave the sides straight or decrease 1 stitch at the same decrease row, according to pattern.

6. Skirt #2 is a straight skirt which has 2 reducing darts at the yoke. It gives a much better fit than just decreasing at the side seams.
7. Skirt #3 has a straight front panel, toward which the side panels are decreased.
8. Sketch #4 has two darts, which reduce towards the waist and enlarge again towards the bust. We knit our exercise #4, page 145 to practise the decrease and increase on one sample.
9. Sketch #5 is a V-neck cardigan. We have done the fully fashioned decrease, which is a one-way dart, already with our facings, page 124 and page 126.

We also did a fully fashioned increase and decrease on Page 40.

10. Skirt #6 has five darts at the yoke, reducing a full skirt drastically towards the waist. For this effect, one has, for each decreasing row, to take the whole knit off on contrast yarn. One has to calculate very carefully and work the darts in the same manner as the crown of the toque, page 68.
11. Sketch #7 is a Bikini top, which can be worked out also with increasing and decreasing darts.

HORIZONTAL DARTS - BUST DARTS



Knitted with short rows:

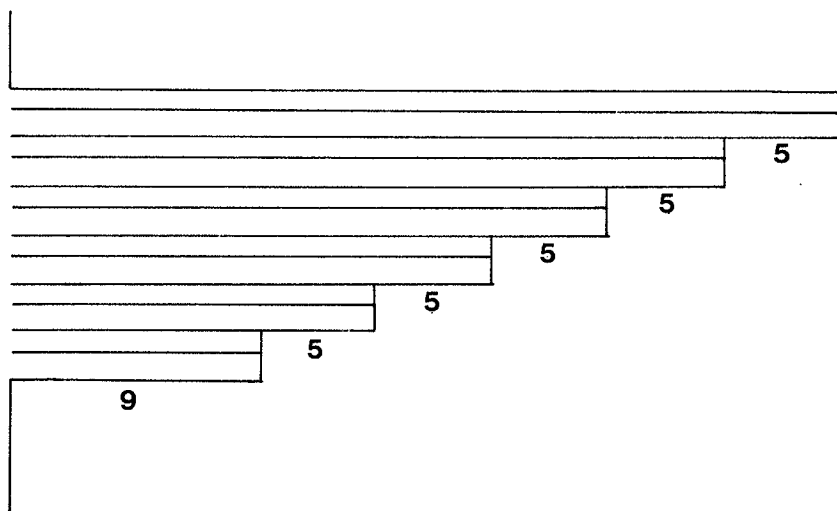
Exercise: Cast on 40 st. Knit 30 rows. Knit dart over 24 st. (6 sections of 4 st. each).

Watch which side has to be decreased in order to make the dart point upwards.

(The side opposite the carriage starts with the 4 D-position needles).

Question: Dart is 12 cm long and 3 cm deep;

How do you calculate:



Stitch calculation

5 cm = 14 st.

10 cm = 28 st.

1 cm = 2.8 st.

12 cm = 34 st.

Row calculation

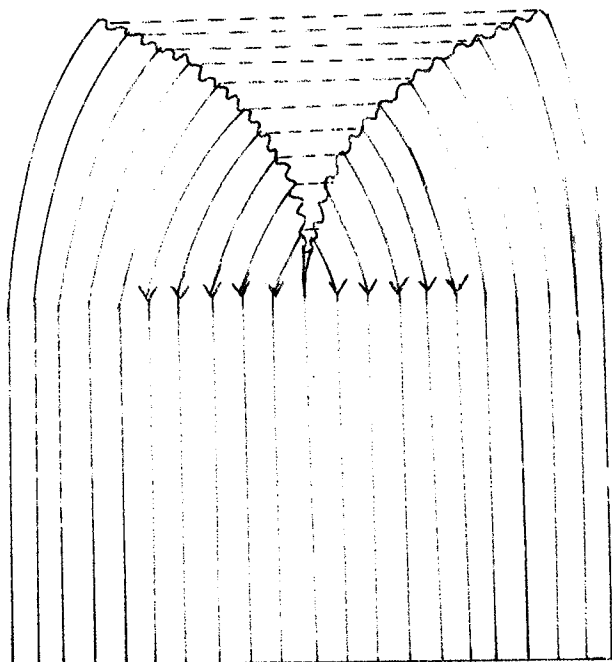
5 cm = 20 rows

1 cm = 4 rows

3 cm = 12 rows

We have 6 decrease rows or 6 sections. We have 34 st. to place into those 6 sections. We divide 34 by 6 = 5, leaving 4. We add those 4 st. to the first section, because we have the seam allowance on this side.

KNIT A HOOD WITH SHORT ROWS



Exercise: Cast on 40 st. Knit 40 rows (watch that center 0 mark is in the middle of your sample).

Pull all needles left of 0 plus the first 8 needles right of 0 into D-position.

Knit those 8 needles, one by one, back into working with short rows. We are now row 56, carriage is at right.

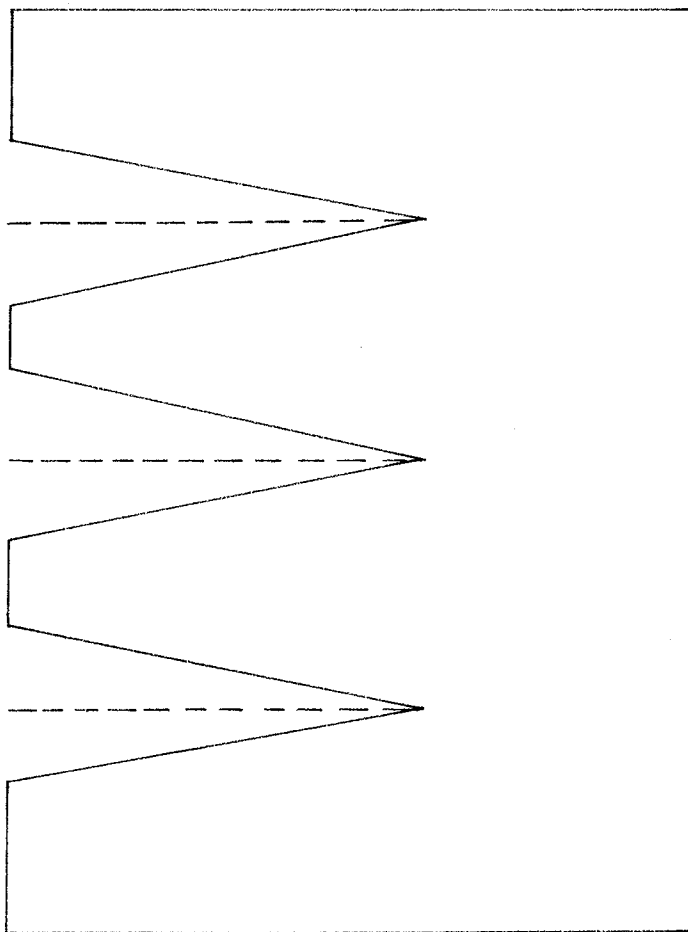
Knit carriage to left over all needles.

Pull right side of center 0 mark, plus the first 8 needles, left of 0 into D-position. Repeat the short row dart reversed. Carriage is at left; we are on row 73.

Knit back to right side over all needles.

Take off on contrast yarn.

Steam and graft open stitches to open stitches in center of hood.



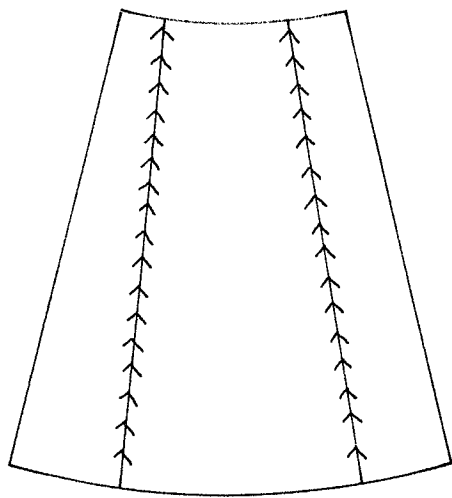
DARTS TO REDUCE WIDTH

Exercise: Cast on 50 st.
Knit 10 rows. This time we are not knitting gores, which give added width, but we are knitting darts which take out width of the fabric.

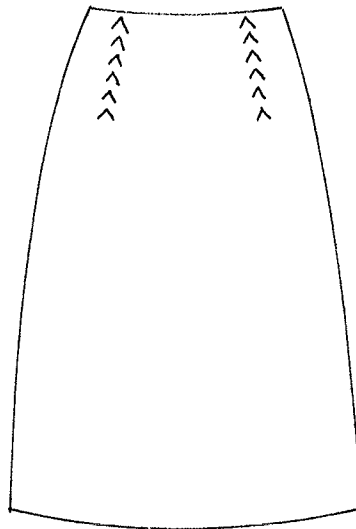
On the side opposite carriage (which is at the same time the reducing side), pull out 30 needles to D-position. Knit dart with short rows by adding 6x5 stitches to needles in working position, till all 30 needles are used up. Then reverse and pull same needles (6x5) again back into D-position. Knit 6 rows and start a new dart.

Knit 3 darts altogether. Add 10 rows and cast off. This technique is used especially for hoods knitted sideways.

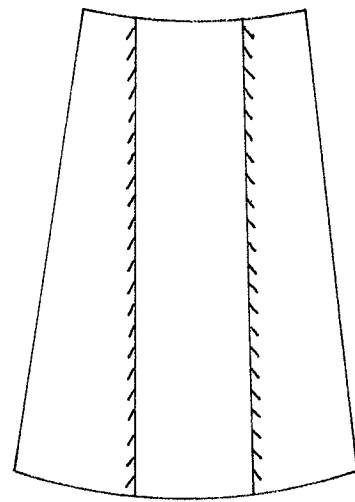
KNITTED DARTS BY TRANSFERRED STITCHES



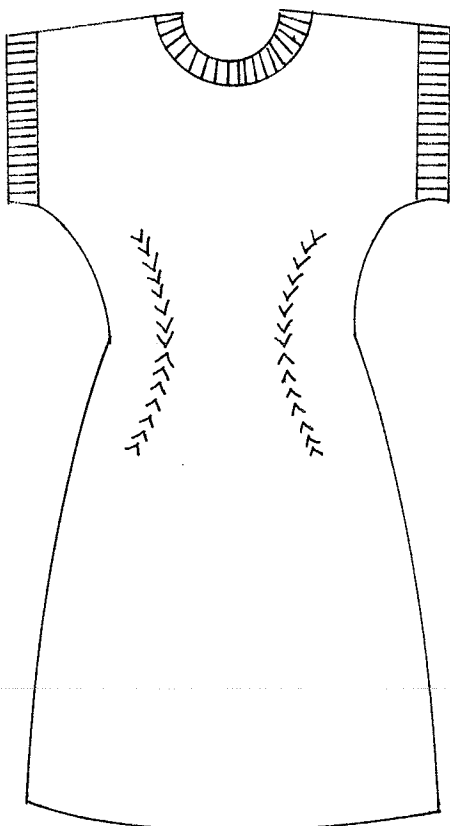
Skirt #1



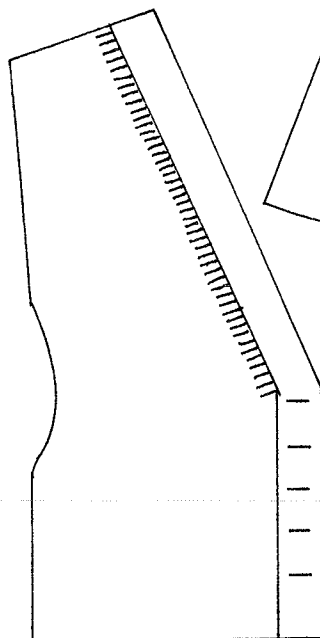
Skirt #2



Skirt #3

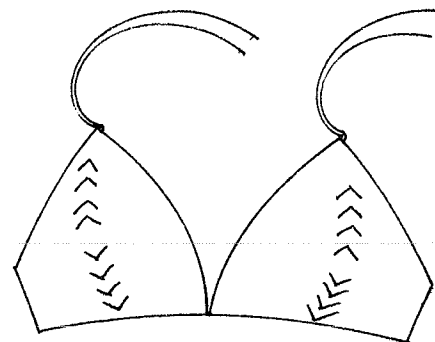
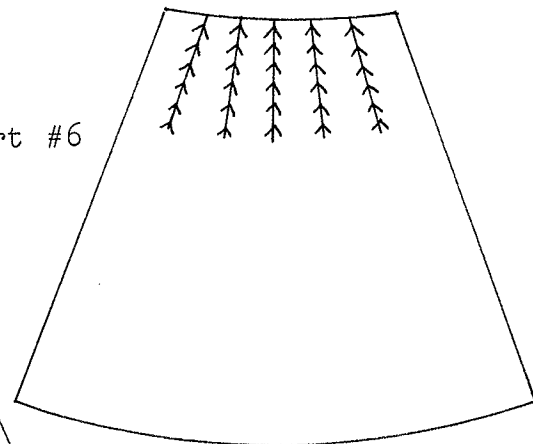


Sketch #4



Sketch #5

Skirt #6

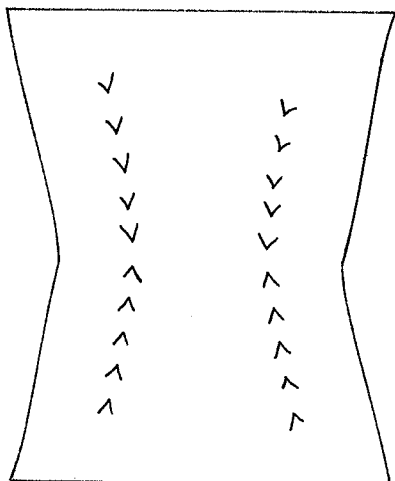


Sketch #7

Different samples where darts are applied.

DARTS TO DECREASE - DARTS TO INCREASE

with transferred stitches



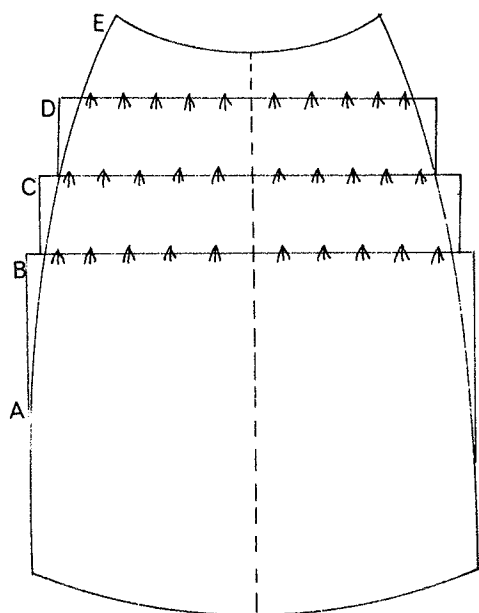
Exercise: Cast on 52 st. Knit 20 rows. Mark stitches of needle #12 each side of center 0. Those will each be the center of our two darts. Put both neighbouring stitches of each center st. to their center needle. Move all 3 stitches, now collected on needle 12, together towards the middle. Then transfer all the other st. left and right also toward the middle (two needles over), to leave no gap. Knit 8 rows. Do same decrease again, making sure the dart centers are exactly above each other. Knit 8 rows and repeat for a total of 5 decreases. We have 32 stitches. Knit 10 rows.

Now we start to increase for our darts. We move 8 outside stitches on both sides two needles over and the next 3 st. one needle over. We have 3 st. at "dart-center", with one empty needle each side. We take the "horizontal bar" from below the 2 needles beside the exact center-dart-needle and put those bars onto the empty needles, as we learned before. Knit 8 rows and repeat for a total of 5 times. Make sure the 3 dart needles are centered properly above the dart center.

Please note also that the dart-center is shifting according to our decrease or increase, though the center stitch has to stay the same.

Finish with 20 rows straight. Cast off.

DECREASE ACROSS THE FABRIC



The decrease across the fabric is another form of "darting". It is also another way to "round off" a hem. It is the same principle as the toque crown, page 68. We take off on contrast yarn and reduce, while putting the knit back to the machine in a calculated proportion. Usually we have 3 reducing rows, starting at the hip point. See the diagram next page. Instead of reducing at the side seam, between A and B 10 st. each side, one at a time, we reduce the amount of

20 stitches in one row across the fabric.

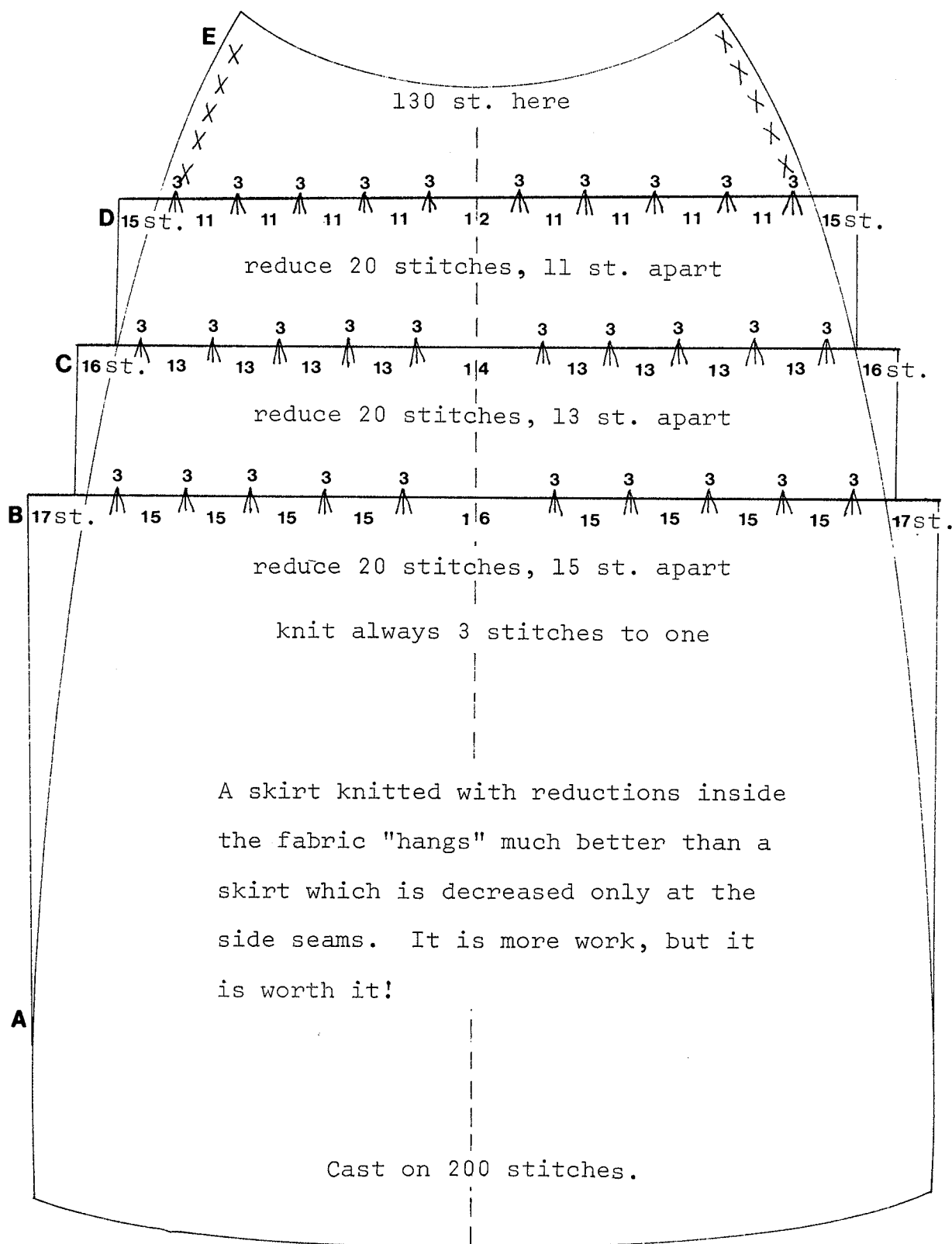
We do the same between B and C and between C and D. The curve in the last section between D and E is decreased at the side seams.

If one has a skirt with border designs, one does the decreasing rows between the border lines. Make sure that the center of the skirt always matches the center mark of the machine, in order to line up all center motifs accurately above each other in the center of the skirt. It is a good practice to mark the center stitch and to hook that stitch first back to the center of the machine, while hanging the reducing row back. Then continue hanging the rest of the stitches back, starting from the center, to both sides.

In case of an Allover pattern, one has to watch the center the same way, but distribute the decreases more concentrated to the sides. One has to leave approx. 40 stitches at the center of the skirt as a straight vertical panel, where the pattern is undisturbed. The distortion of the pattern towards the side seams is usually not very visible.

DECREASE ACROSS THE FABRIC

CONSTRUCTION



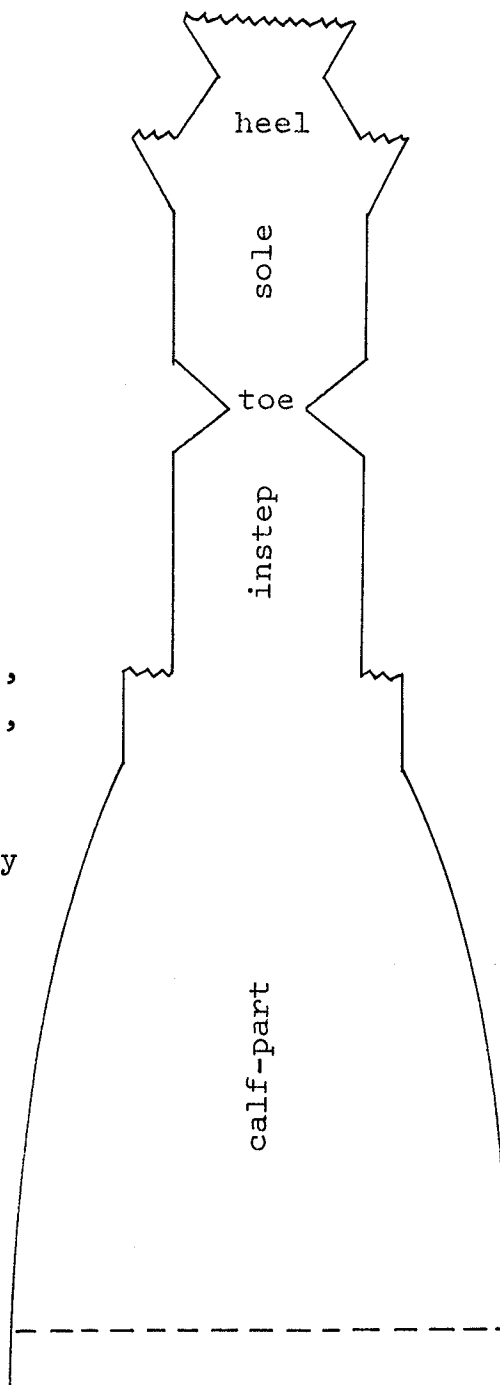
notes

HEEL, BOOTIES, STOCKINGS

1. We knit our stockings "open".

The construction looks like the sketch at right. It is grafted together later on. The industry naturally has special machines for knitting stockings and we could never compete with that for commercial use, neither in time or in finish. But for the boutique type garments, where matching stockings is part of the design, we need to know how to knit them on our flat bed machine.

2. We start whatever length or shape, be it booties, socks or stockings, with the calf or ankle part. We cast on for the full width around the leg or ankle and start usually with a casing or rib.
3. For long stockings or knee socks, one has to shape, unless the whole stocking is knitted in rib.
4. After we have reached the length, to start the heel, we put one quarter of the stitches each side on contrast yarn and drop them. We continue knitting the center half for the instep, to the point where we want to start the toe part.

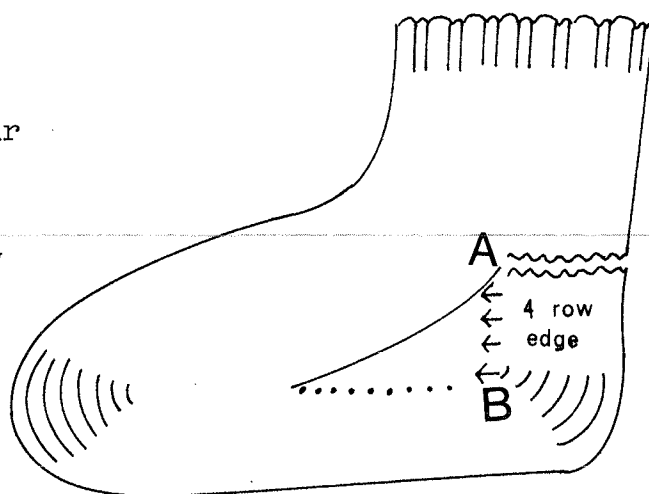


Heel, Booties, Stockings (continued)

5. The toe part is knitted the same way as the heel, see exercise, Page 141. We decrease with short rows on both sides one by one stitch till we have one third of our needles left in the center. Then we increase again, knitting the D-position needles one by one back to working position. This forms the cap of the toes.
6. We continue knitting the sole with the same amount of stitches as the instep. At a given point, shortly before we start the heel, we increase at each side of the sole, for a little wedge, which we need for our fit, between sole, heel and instep. We then take the increased stitches off on contrast yarn again and start the heel.
7. We work the heel as we have done the toe part already, Page 141. The proportion is always $\frac{1}{3} - \frac{1}{3} - \frac{1}{3}$, which means: decrease $\frac{1}{3}$ of your stitches each side with short rows, then increase again till all stitches are knitted back to working position.
8. We knit 4 rows straight.

This is the spot where we graft the stitches from our little side wedges to the open stitches of the 4 row edge above the heel.
(Between A and B on the sketch).

Take off on contrast yarn.

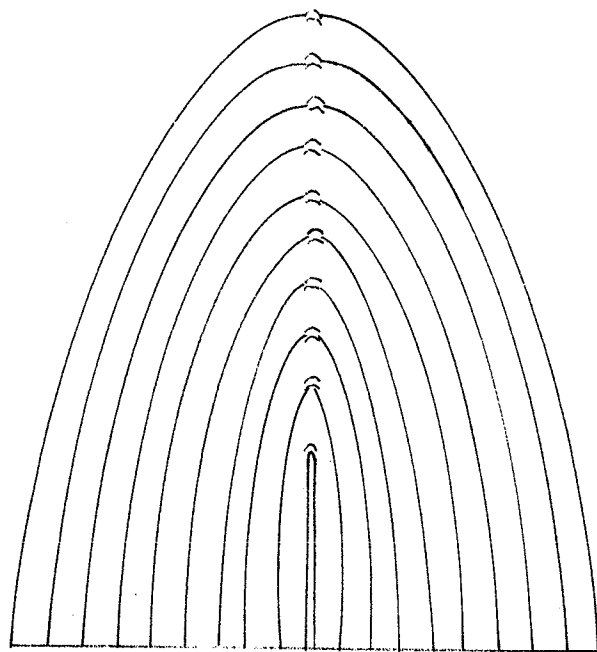


Heel, Booties, Stockings (continued)

9. We then graft first the calf part with vertical graft stitches. Then, with horizontal graft, open stitches to open stitches, the heel to the calf part. And lastly, we close the foot by grafting the sole to the instep.
10. To calculate the stocking before we knit, works usually only approximately, because tension and stretch for something as formfitted as a stocking, is hard to account for. Therefore, be prepared to knit 3 stockings for your first pair. The first one is your "try-out" sample. From there you adjust to the proper amount of stitches and rows, to fit your individual size. The "try-out" has to be knitted with the same yarn and the same tension as your pair. After you have knitted your first ADJUSTED stocking, you can unravel your sample.
11. One knits stockings in general tighter than sweaters, and also fits them tighter. Still, one can always make exceptions if it is for a special reason.

If one knits a Fair Isle or "Knit-in" pattern, one has very little stretch, besides which stretching a two colour knit to its capacity distorts the design very much. So, watch the proper width.
12. Long leggings are knitted the same way, shaped toward the calf and finished with a strap instead of a heel.

Heels, Booties, Stockings (continued)

**FORM A HEEL WITH SHORT ROWS**

Exercise #1: Cast on 30 st.

Knit 20 rows. Carriage is at right. Pull 1st needle at left into D-position. Knit to left. Wrap yarn under needle in D-position. At same time, pull out 1st needle at right. Knit to right. Wrap yarn under needle

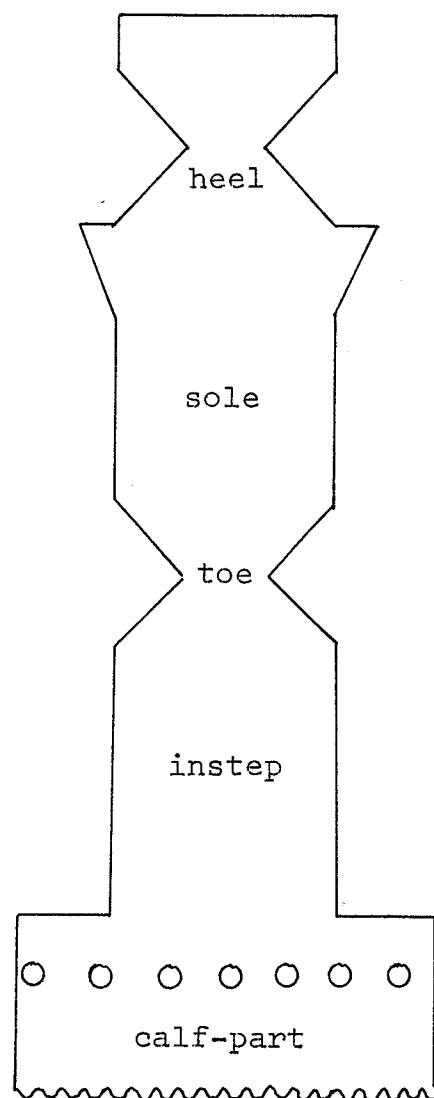
in D-position. At the same time pull out next needle at left. Knit to left. Wrap yarn under inner D-position needle and pull at the same time next needle at right. Knit to right. Repeat till only 10 needles are left in center. (This should be always $\frac{1}{3}$ of total amount of stitches).

Now do the opposite. Push 1st inner needle at left into work (or C-position). Knit to left. Wrap yarn under last inner needle and pull right inner needle to work (or C-position). Knit to right. The inner needle has now always 3 yarn loops! Continue putting the inner needles one by one back into working, till all needles are back in B-position.

Knit 20 rows over all needles and cast off.

Heel, Booties, Stockings (continued)

BABY SOCK OR BOOTIE

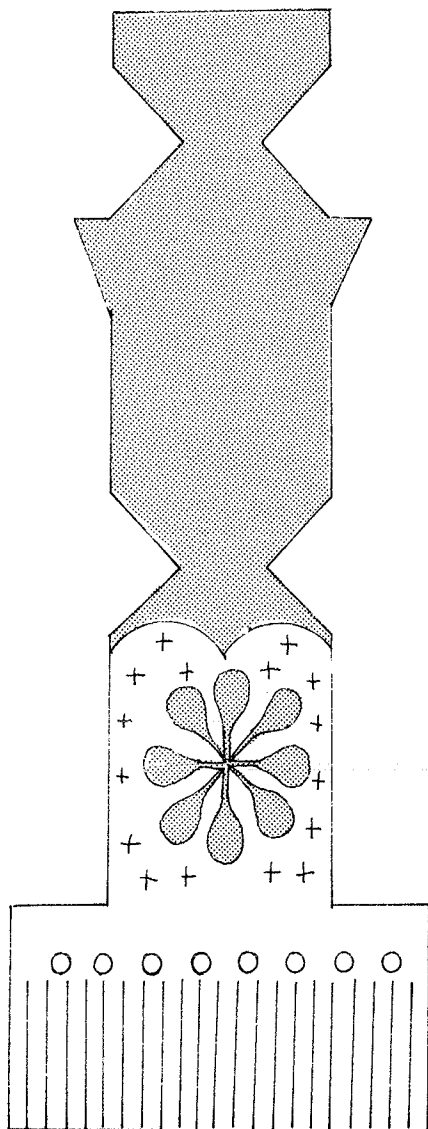


Exercise #2:

Cast on 43 st. (Tension 6) with baby yarn. Knit 4 rows. Transfer every other stitch. Leave all needles in working position. Knit 4 rows. Hang cast on loops back to needles, forming a picot edge. Knit 10 rows. Transfer every other stitch again, to form holes for a drawstring Knit 6 rows. Put 11 stitches each side on contrast yarn and drop off. Knit instep with 21 stitches over 26 rows straight. Form toes by short rows (7-7-7). Knit sole part straight over 21 st., 18 rows. Increase 1 st each side. Knit

back and forth. Repeat twice. Drop the 3 increased stitches each side on contrast yarn. Form heel over 21 stitches (7-7-7) same as toes. Knit back and forth and take off on contrast yarn. Weave together leg part as close to the edge as possible. Graft open heel stitches to open leg stitches. Graft the 3 st. on each side to the last 2 rows on heel. Now graft sole to instep on both sides same as back of bootie.

Heel, Booties, Stockings (continued)

SLIPPER FOR SMALL CHILDwith 2 colour ornament

We are knitting a child's slipper, with a two colour ornament on the instep. Before we start knitting, we have to design the ornament.

The slipper is knitted over 50 needles so we know we can fit our motif into 24 fields on our punch card. We calculated to have 28 rows to work with and design our motif into that given proportion of stitches and rows.

Exercise #3: Cast on 25 st. on every other needle. Knit 12 rows on tension 3. Knit 1 row tension 9, 11 rows on tension 3. Hang cast-on loops back to the same

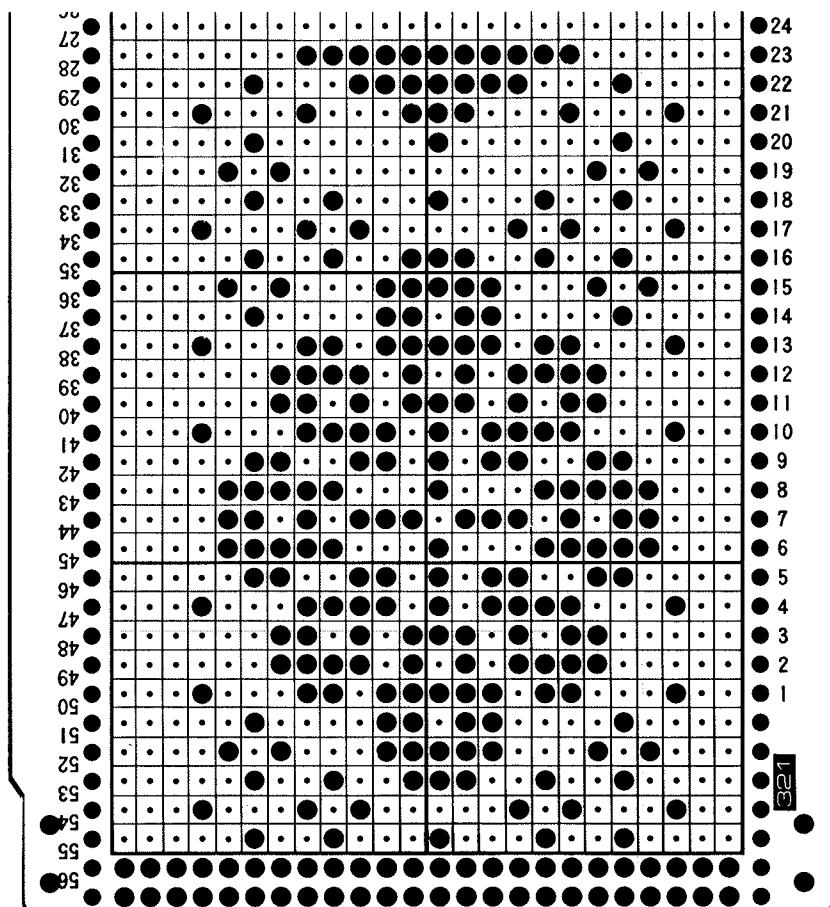
needles. Pull empty needles back to working for drawstring holes and knit 4 rows on tension 6 over all 50 needles. Drop 13 stitches on each side on contrast yarn. Put ornament card in and knit back and forth still with main colour, to set the computer. We do not need the single ornament attachment because we are knitting the ornament only with 19 needles. There is no repeat. Put contrast

Heel, Booties, Stockings (continued)

colour in feeder 2, tension to 7, dial on "knit-in". Knit pattern over 28 rows. Change yarn (put contrast colour in feeder 1, cut main colour off). We are knitting toes, sole and heel with the contrast colour. Put tension back to 6, dial on stockinette. Form toes over 8-8-8 stitches. Knit 20 rows straight for sole (in contrast colour). Increase 1 st. each side. Knit back and forth. Repeat 2 more times. Drop the 3 increased stitches on each side on contrast yarn. Form heel over 8-8-8 st., same as toes. Knit back and forth and take off on contrast yarn.

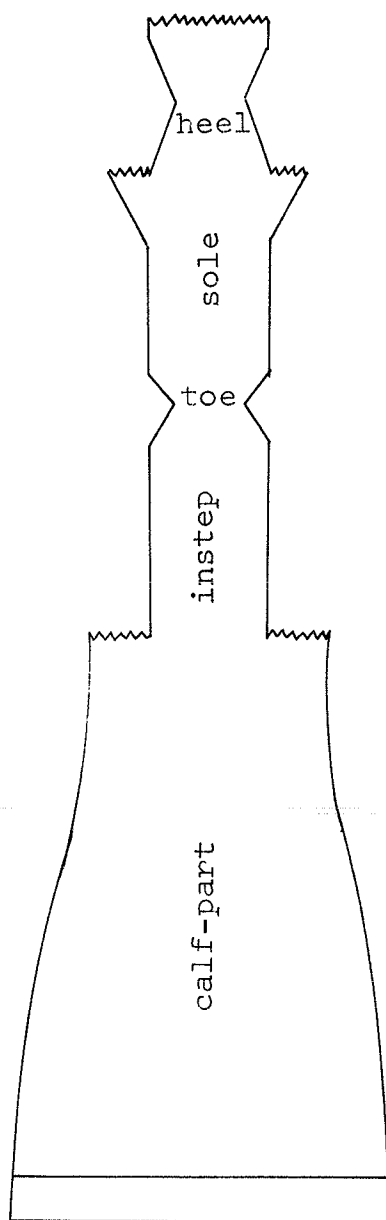
Weave or graft back together (we have 1 st. each side seam allowance there). Graft open heel stitches horizontally to leg stitches. Graft 3 st. on each side to the last 2 rows on heel. Now graft sole to instep on both sides.

Here is the
punch card
motif for
the slipper.



Heel, Booties, Stockings (continued)

KNEE SOCKS



Described is a knee sock in stock-inette stitch, fitting size $9\frac{1}{2}$ medium length. Yarn: approx. 5 oz. yarn, 4-ply wool. Tension 6. Gauge 16 st to 24 rows.

Cast on width below knee, or as required. (87 st. on sample).

Knit 24 rows, form casing, continue knitting straight to row 70. Shape calf according to pattern. In sample 14 stitches were decreased on each side between row 70 and row 162. Continue knitting straight with 57 stitches to row 204.

Divide stitches. Take first and last 15 st. off on contrast yarn and drop them. Knit remaining 29 center stitches for instep over 72 rows straight.

Form toe cap with short rows (10-9-10). Knit sole straight over 52 rows. Increase 5 st. each side, one by one every 4 rows for the little wedge. Take the same stitches off on contrast yarn and form the heel over 29 needles. (10-9-10). Knit 4 rows over it and take off on contrast yarn. Weave back of leg seam. Graft open heel to open leg and weave sides of instep. This will be your sample stocking. Now adjust to your own size, and knit a pair, with same type of yarn and tension.

MITTS AND GLOVES

1. Can we knit mitts and gloves on our Flat-Bed Machine?
2. There are many different ways to do so, but we will always get a flat piece, which has to be sewn or grafted together.
3. There are a lot of complicated operations involved, and it takes quite a time to make a glove or mitt, compared to their size. We can knit a big sweater piece nearly as fast.
4. Because of that, it is not practical from the commercial point of view. The industry has special machines for this and produce them fast and cheap.
5. But from our design point of view, it is different, because we make outfits where the mitts or gloves have to match and are part of the design. So, we have to learn how to do them.
6. Mitts are naturally easier to do than gloves. So, we start with mitts. We first knit a simplified flat mitt for beginners which is easy to do. Later on in the course we go to the more fully-fashioned construction.
7. The glove can also be done in different ways. Our first glove will be knitted sideways, which is an easy way to cope with the single fingers. Once you have done your sample-glove, you can vary it in many ways; with a center design, or by knitting in stripes, every finger different, or by accenting each finger with a row of holes. Think of a few more variations.
8. Our next way to cope with a glove is again one flat open piece. I give you a construction chart as well as an instruction sheet. It took me a long time to work it out, but it makes quite a good glove and is far easier than the conventional, fully fashioned way, which nevertheless still has to be sewn together. In my opinion it is not worth the trouble to spend hours for a fully-fashioned glove. We cannot compete with special industrial knitting machines for gloves which do tubular knitting.

SIMPLIFIED MITT

Flat Open Construction for Beginners:

Exercise:

Cast on every other needle 30 st. Knit double welt over 54-60 rows on tension 5. If you have unelastic yarn, you might even go to tension 6. Hang cast on loops to empty needles (60 sts.)

Set row counter back to 0 and tension dial to 7. *Knit 5 rows. Increase 1 stitch on both sides, repeat from *3 more times (row 20-68 sts.) Knit to row 26. Put 9 st. for the thumb on each side on contrast yarn and drop. Add 2 st. to each side (54 st.) Knit 34 rows (row 58). Put left half of stitches (27 st.) on contrast yarn and drop. Put row counter back to row 58.

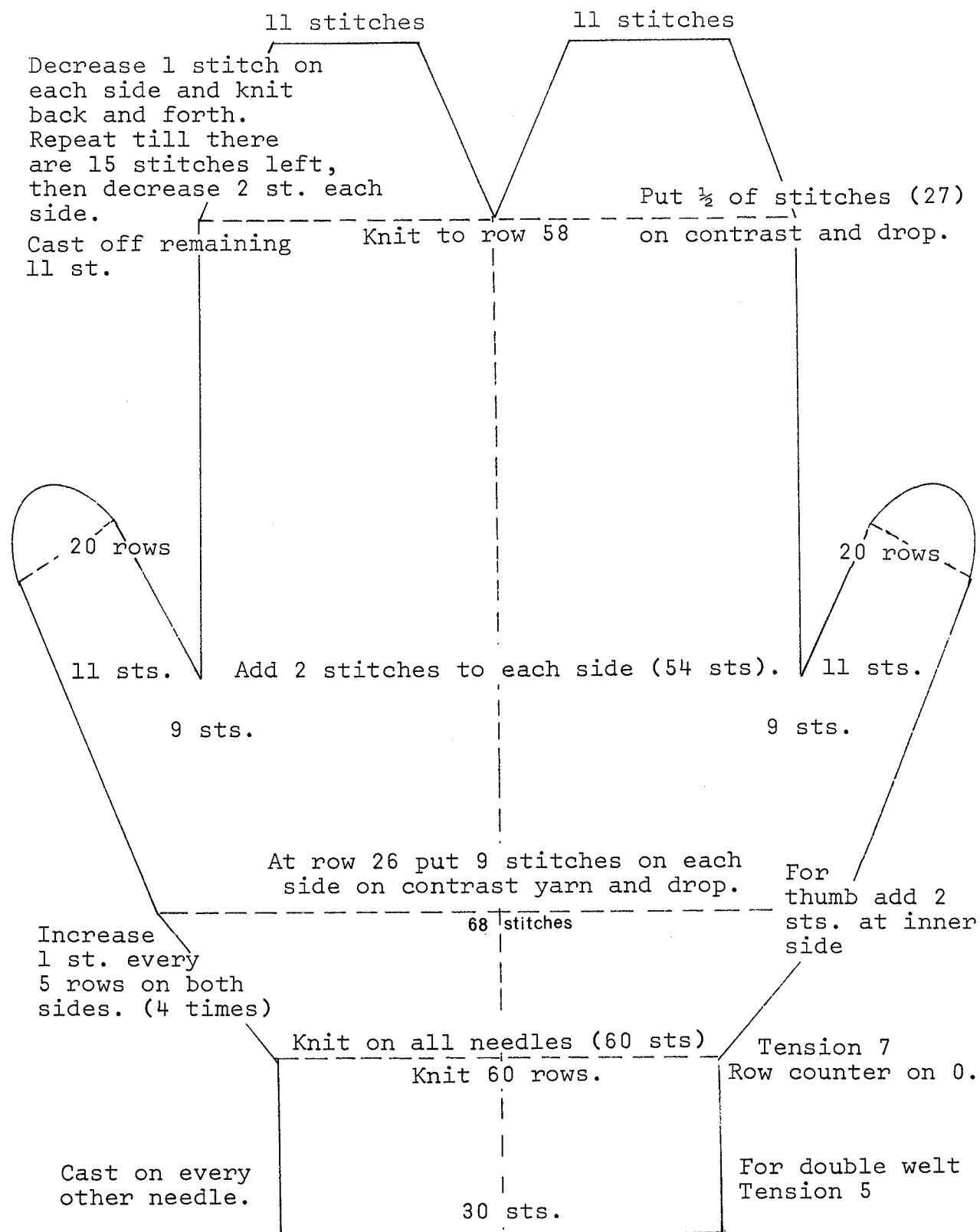
*On remaining stitches decrease 1 stitch on each side, knit back and forth. Repeat this until there are 15 stitches left. (Row 70). Decrease 2 sts. each side, knit back and forth and cast off the remaining 11 sts. (row 72). Hang left side of mitten back on the machine and put row counter back to 58. Repeat from *.

Thumb: Pick up the 9 stitches and add 2 stitches at the inner side by taking the cast on loops of the 2 sts. increased before. Knit 20 rows over the 11 stitches. For the tip, decrease 1 st. on either side, knit back and forth. Decrease 2 sts. on either side, knit back and forth. Cast off remaining 5 sts. Repeat for other thumb. Steam and sew seam together close to the edge, either by hand or with a zig-zag stitch by machine. Graft welt as we have learned, first the outside part, then the inner part.

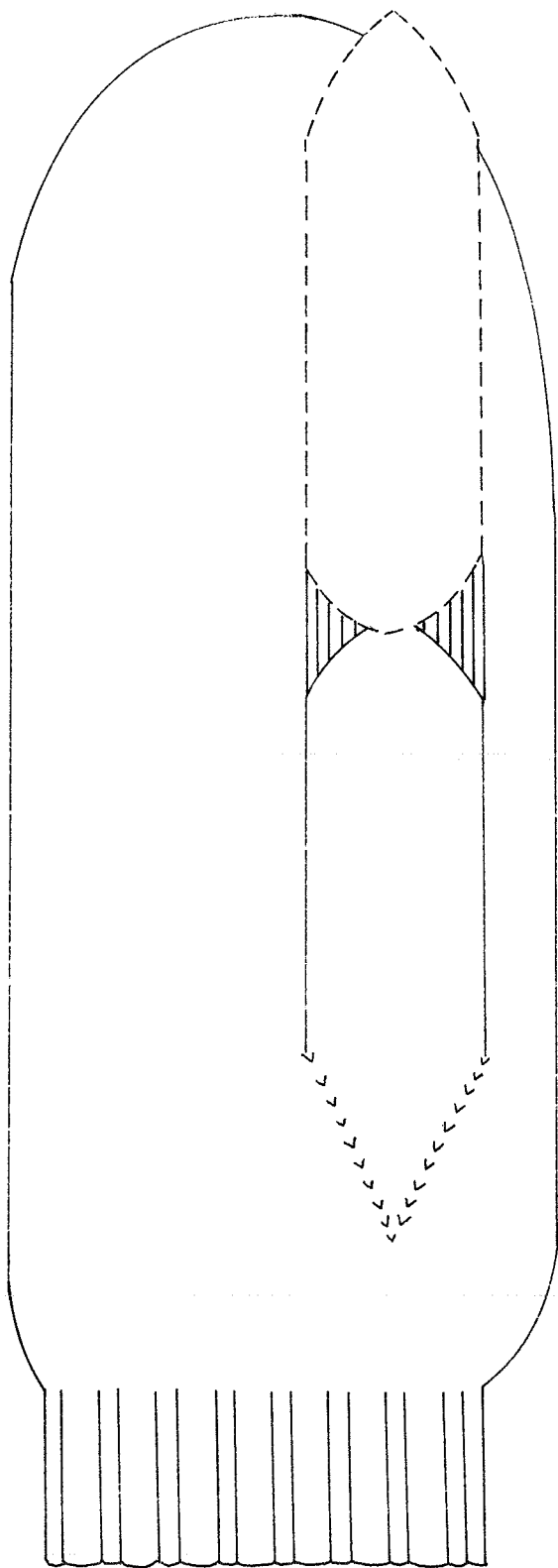
On the next page is a graph of the complete construction of the mitt, which makes it easier to understand what you are doing.

This mitt is an exercise. Width and length have to be adjusted to own size, if you want to knit a pair for yourself.

CONSTRUCTION OF A SIMPLIFIED MITT



THE FULLY FASHIONED MITT

Exercise for the Thumb with Gusset.

Cast on 20 stitches. Knit 10 rows.

Start thumb: (The thumb is being done on the right side of our sample).

Transfer the 4 last stitches on the right side one needle outwards.

Increase one stitch on empty needle and mark this stitch with contrast yarn as center of thumb, which will be worked in like a wedge. Knit twice back and forth (4 rows).

Transfer the 4 side stitches 2 needles outward. Transfer center thumb stitch one needle outwards.

Increase 1 stitch on either side of center, thumb on empty needles. Knit twice back and forth. Thumb now has 3 stitches. *Transfer the 3 side stitches 2 needles outwards.

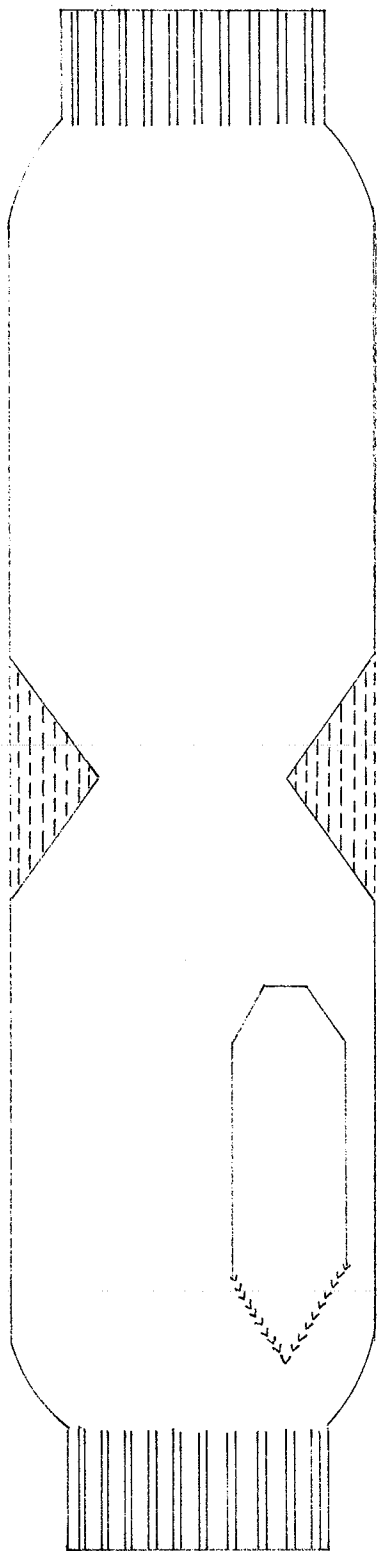
Transfer the 3 thumb stitches 1 needle outwards. Increase the 2 st. on empty needles (on both sides of thumb stitches). Knit twice back and forth. Repeat from *. (The thumb needles increase every transfer row (every 4th row) 2 stitches), till there are 11 thumb st. Knit back and forth.

Mitts - Exercise for Thumb (continued)

Pull all 16 needles opposite thumb side into hold (Levers on I). Knit over it (1 row only). Do not wind yarn under last needle before returning. Pull the 4 side stitches also into hold and knit 19 more rows over the 11 thumb needles. Form cap of thumb by short row method (4-3-4). Again knit 20 rows and push all needles back to work or knit them in on Lever II. Knit back and forth. Now, we start decreasing the thumb stitches. Put stitch 5 to needle 6 and stitch 15 to needle 14. Transfer stitches inwards, so that there are no empty needles. Knit back and forth. *Put stitch 5 to needle 6 and stitch 13 to needle 12. Transfer the stitches inwards. Knit back and forth. Repeat from *, reducing thumb needles 2 stitches on EVERY row, till the last three stitches are knitted to one. Knit back and forth and knit again stitches 5 and 6 together, to get the same number of stitches we started with.

Knit 10 rows over it and cast off.

CONSTRUCTION OF A FULLY FASHIONED MITT

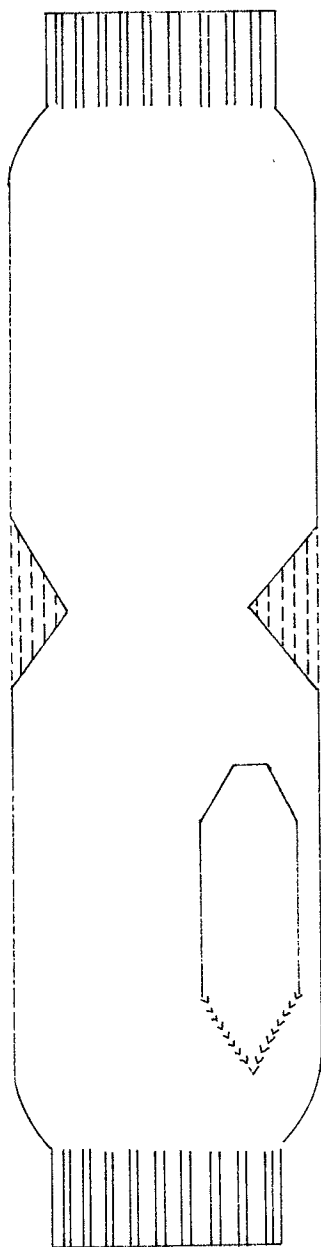


Cast on 16 stitches on every other needle. Knit double welt on tension 5 over 60 rows. Put welt loops on to empty needles. Decrease one stitch. We knit with 30 st. Tension 7. Put row counter back to 000.

Knit 6 rows straight, then start increasing for the thumb gusset, which will be developed between stitch 4 and 5. Follow the instructions of the thumb exercise (Page 149) till the gusset has 11 stitches. Knit back and forth (row 26).

Pull all 26 needles opposite thumb side into D-position (front levers on I). Knit to left. Do NOT wind yarn under last needle before returning. Pull the 4 outside stitches to D-position and knit to right. Only the 11 thumb stitches are in B-position. Knit 20 rows straight over those 11 stitches. Form cap of thumb by short row method (4-3-4).

Mitts - Fully Fashioned (continued)



Knit 22 rows straight. Knit the 4 outside needles in by hand. Carriage is at right. Pull all needles to C-position. Knit back and forth over all needles. Start decreasing the gusset stitches. Follow the thumb exercise. Repeat the last decrease row, by knitting three stitches to one again, exactly above the last decrease. We have 29 st. and are at row 38.

Knit 20 rows straight. Form cap by short row method, (10-9-10).

Knit upper side of mitt over 58 rows, to match. We have 29 stitches. Work in a design or single motif, if wanted. Transfer every other needle for mock rib welt, add 1 more needle each side and knit welt over 60 rows. Cast off and slip stitch welt in place.

One can also take the welt stitches off on contrast yarn and graft the open stitches to the inside of the welt. Still another method is to put the loops of the "starting welt row" to the empty needles on to the machine and cast off all needles at once. (It leaves a little ridge inside). After having knitted the "sample mitt", one has to adjust to exactly the wanted size and knit a pair with the altered calculation in length and width.

EXERCISE FOR A MITT-DESIGN IN FAIR-ISLE

We are knitting the mitt now in a Fair-Isle pattern. First we have to design a special graph according to the number of stitches and rows, we are using. The design has to be worked out, that no big floats occur in the inside of the mitt, which means the ornament colour has to be "knitted-in" quite often. A small distance between the change of colours, in other words a small design is favourable. For designs which leave big floats, one would have to "chainstitch" or crochet over the floats, to secure them inside, which is not very practical.

Take the shape of the mitt. Draw a centerline and mark the row gauge every $2\frac{1}{2}$ cm. Draw horizontal and vertical lines, parting the whole mitt into $2\frac{1}{2}$ cm squares. Sketch your design into the shape.

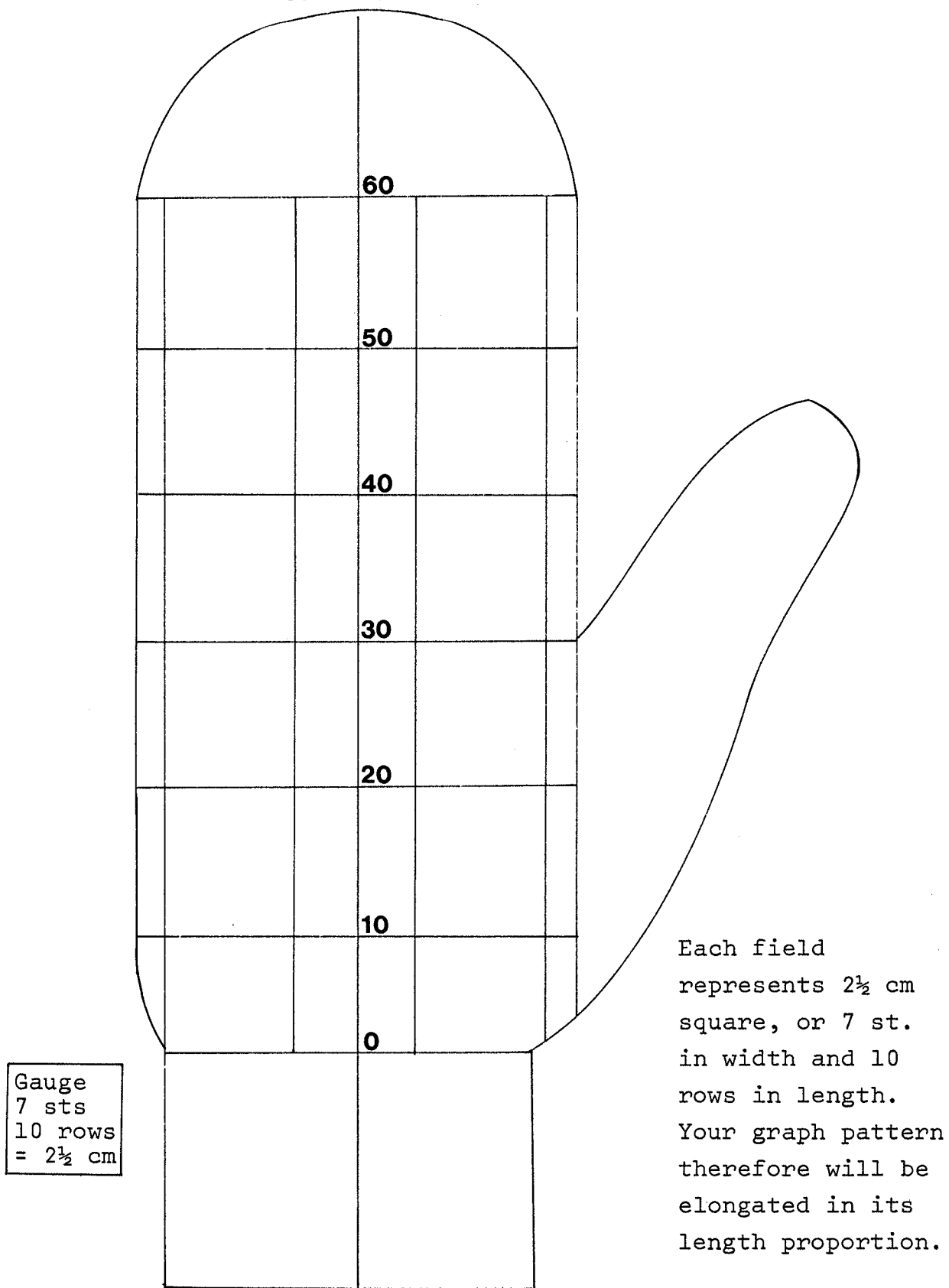
Now take graph paper and transfer the proportion of your gauge. Let us assume that we have 14 st. and 20 rows per 5 cm square, or 7 stitches and 10 rows per $2\frac{1}{2}$ cm. Each square of our glove shape becomes now 7 fields in width and 10 rows in length on our graph paper. (Remember section 8 of our "Knit-in" Design, Page 45 Transpose your design to this proportion, regardless of our 24 st. width card. See diagram next page. If you designed a small allover pattern, it causes no problem even if you needed more than 24 stitches. The pattern would just repeat to the edge of the knit.

If you designed a motif, you would use the single ornament attachment and would not have to worry about floats or width of the card.

You could also use the 24 stitch card for a motif and pull some additional stitches out by hand, which are not on the card, for a little border design, going along the edge of the mitt.

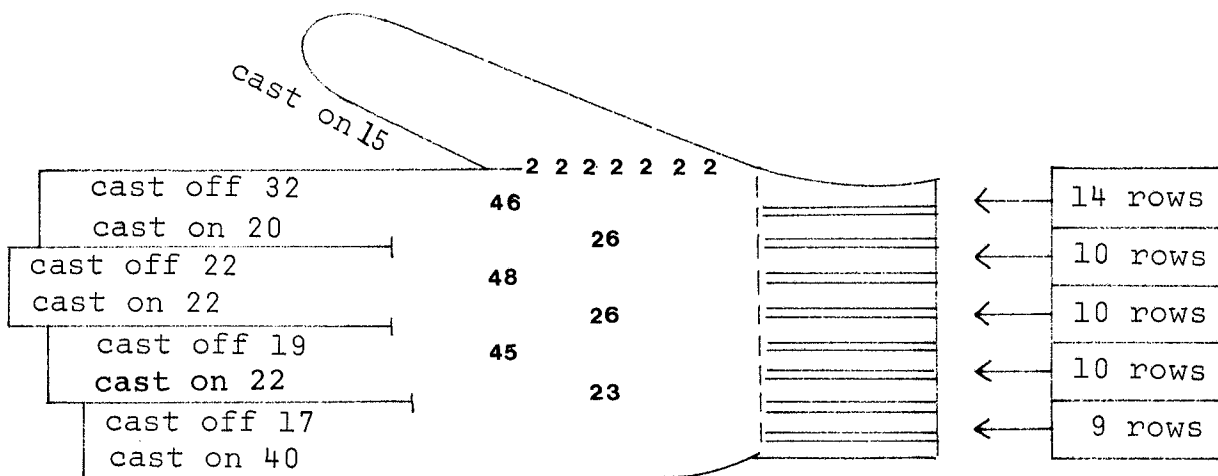
But whatever you design, it has to fit into the given shape of the mitt.

CONSTRUCTION FOR THE MITT-DESIGN



notes

GLOVE KNITTED HORIZONTALLY IN TWO PIECES



This is a very easy way to accomplish a glove, by knitting it sideways in 2 flat pieces. It gives us a lot of variation in colour combination. One can knit both sides in a different shade, or one can even knit in stripes, which can make every finger a different colour, or give every finger a centerline.

The size given is a regular 6½-7 fit, but one has to make a "try-out" first anyway. Every yarn and machine knits differently. Therefore, one has to adjust to the wanted size and fit.

Knitting Instruction:

Left hand: Cast on 40 st. Knit 9 rows straight. Carriage is on left side. Cast off 17 st. (for little finger). Cast on at the same side at the same time, 22 st. Knit 10 rows. Cast off 19 st. Cast on 22 st. Knit 10 rows. Cast off 22 st. Cast on 20 st. Knit 10 rows. Cast off 32 st. Cast on 15 st. for thumb.

At the same time, pull 12 st. from right side into D-position for thumb-gusset. (All this happens at row 39!)

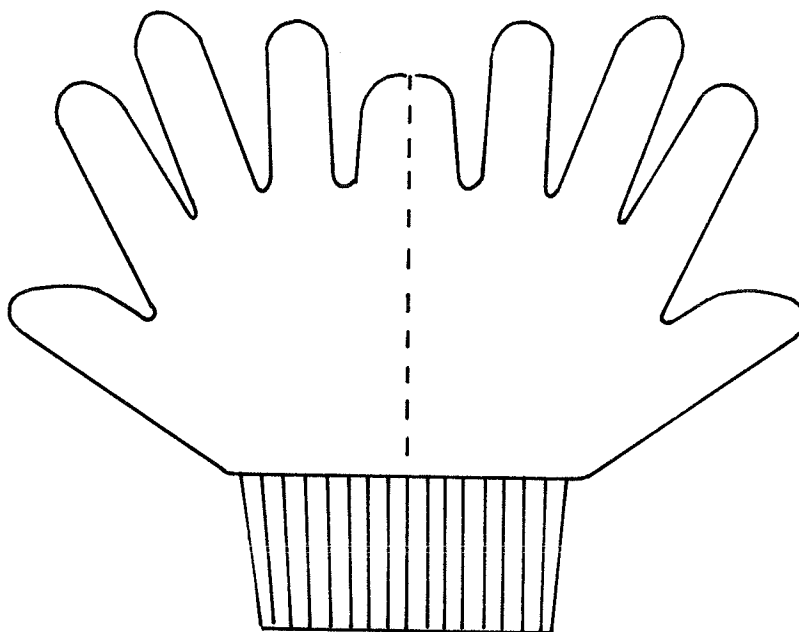
Row 40: Knit to right. It should knit 17 st. (12 are still in D-position)

Row 41: Increase one needle at thumb-tip. Knit to left.

Glove Knitted Horizontally (continued)

- Row 42: Pull 2 more needles for thumb-gusset into work. Knit to right.
- Row 43: As row 41, increase one needle and knit to left.
- Row 44: As row 42, knit to right.
- Row 45: Knit to left.
- Row 46: As row 42, knit to right.
- Row 47: Knit to left.
- Row 48: As row 42, knit to right.
- Row 49: Decrease one st. at thumb-tip. Knit to left.
- Row 50: As row 42. Knit to right. There should be 2 st. left.
- Row 51: As row 49. Knit to left.
- Row 52: Knit to right over all 29 st. Cast off.
- Knit other side of glove reversed. Start left, but then carriage is always at right. Reverse again for right hand glove.
- Combine both sides for knitting a welt or rib, by picking up the stitches. You need approximately 30-35 st. on every other needle for the mock-rib welt, or 40 needles for your rib. Nylon Courtelle or other non-stretch yarn needs a few more stitches than wool.
- You can crochet both sides of the glove together on the outside.
- You can slip stitch by hand or zig-zag by machine, very close to the edge on the inside.

GLOVE KNITTED IN ONE FLAT PIECE-EVERY FINGER SEPARATE



See diagram, page 157.

Cast on 29 st. on every other needle. Knit double welt over 54 rows on tension 5.

Hang cast-on stitches to empty needles. Pull one extra out - this makes 58 stitches.

Set row counter back to 0 and tension dial to 7. Knit 5 rows. Increase one stitch every 5 rows 4 times both sides, makes 66 stitches. Knit to row 24.

Put 9 stitches for the thumb each side on contrast yarn and drop. Add 2 st. each side, makes 52 stitches. Knit till row 38. Take off on contrast yarn.

We knit each finger separately. Row counter back to 0. To each side of the finger will be added 2 st. in place of gussets. We start with the part for the index-finger at the right side, picking up 8 st. (2 right st. have already been added at thumb

Gloves Knitted in One Flat Piece (continued)

height, so we knit to the left, add 2 st. at left side, knit to row 26 over 10 needles. For the finger tip, we decrease 1 st. each side, knit back and forth, decrease 2 st. each side, knit back and forth and cast off. (Leave sufficient thread for sewing, if done by hand).

Now we do the left part of the index finger reversed, adding the 2 st. on the right side of the finger part. Next are both parts of the middle finger. We pick up 6 st. On index finger-side we also pick up the cast-on of the added side stitches, and add 2 new stitches at ring finger side. We knit 26 rows and the tip as before.

The ring finger parts start the same but we only knit 24 rows plus the tip.

We have 12 st. left in center, which we pick up together for the little finger in one piece. We add 2 st. each side by picking up the cast-on-loops of the ring finger sides. Knit 16 rows plus tip.

Finally we knit the 2 thumb parts left at the outside. We pick up the 9 stitches and add 2 stitches at the inner side by taking the cast-on-loops of the index finger side. We knit 16 rows over 11 stitches plus the tip.

Steam and sew both halves together by hand or by machine close to edge.

Graft welt.

notes

MITRED CORNERS WITH SHORT ROWS

We have learned to "turn a corner" for a heel, a toecap, or a fingertip. Now we will do a mitred corner to be used for collars, for triangle shawls, or even to knit a big square or oblong piece of fabric in double width.

1. Our first exercise is a "mini collar" with mitred edges. The sample we knit is a straight standing collar. The edges are "turned" in a mitred angle. If we want a more flat laying collar, we have to insert little wedges in the back of the collar, as we have learned with short rows, page 124 to widen the outside edge. (Page 162)
2. Our second exercise is a mitred corner in a chevron effect, knitted with the same principle. (Page 163)
3. With Exercise #3 you will learn how to shape for a triangle corner with additionally slanted edges as you can use for a shawl to enlarge a knitted centerpiece. At the same time you can add to it an already knitted-on fringe, which then only has to be cut open and knotted. (Page 164)

The triangle can also be knitted into a full sized shawl instead of a triangular edging. Just keep increasing at the outer edge till you meet the mitred corner at the center and reverse. Try it out for yourself.
4. As we have seen in our first exercise for slanted edges, page 72 we do not get a 90° angle with our one by one decrease for the

Mitred Corners (continued)

full corner, also this decrease gives the neatest looking corner. The triangle turns out a bit more pointed. Fig. #1. For some shawls it does not matter, but if you want a precise rectangle you have to decrease alternately, one and two stitches which then distorts the mitred line a little. Fig. #2.

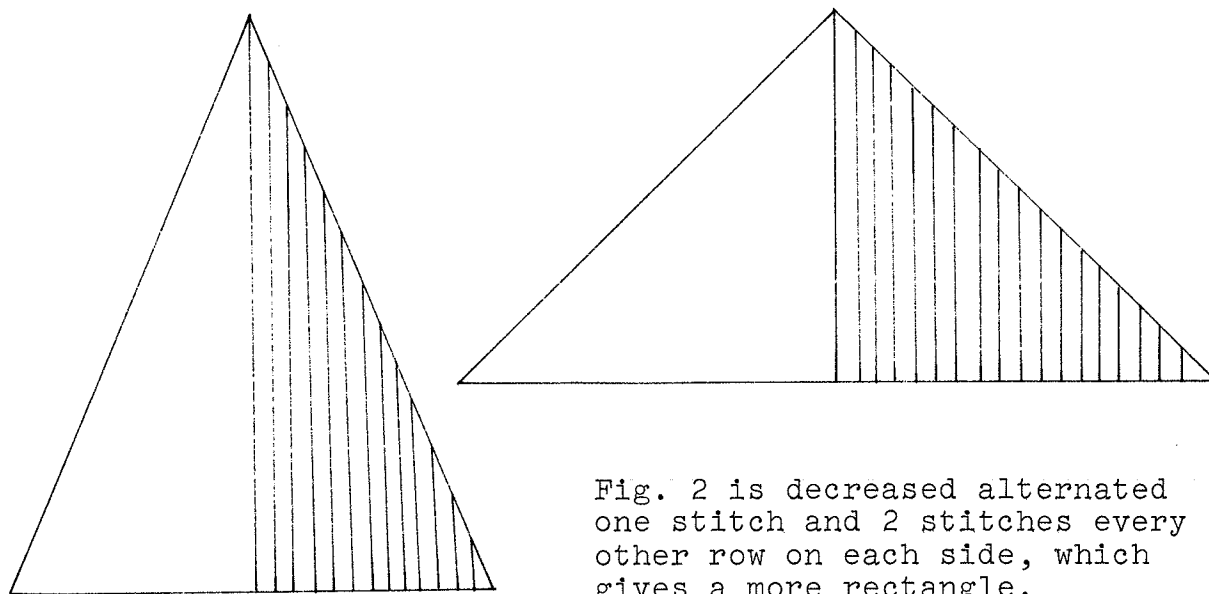
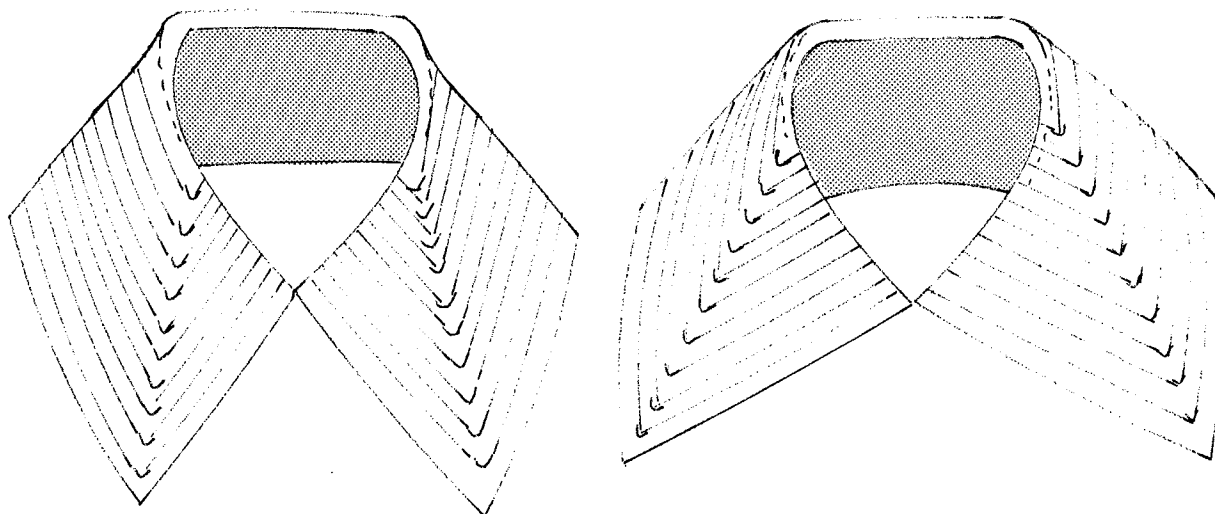


Fig. 1 is decreased one stitch at a time, every other row on each side which gives a pointed triangle.

5. We can knit a flat square with 4 mitred corners by using the same principle. Since we are turning the knit each corner, we get the double width of the machine, which is even enough for a bedspread. See page 165 and page 166. We graft the beginning and the end later on, together in the center of one section, to close the square. The angle, which is not a true rectangle, can usually be flattened out by blocking.

STRAIGHT COLLAR WITH MITRED CORNERS

done with short rows



Exercise #1 for Mini-collar: Cast on 20 st. Knit back and forth. (Carriage is at right). Pull last needle on left side into D-position. Knit with short rows back and forth pulling the needles on by one into D-position till only one is left.

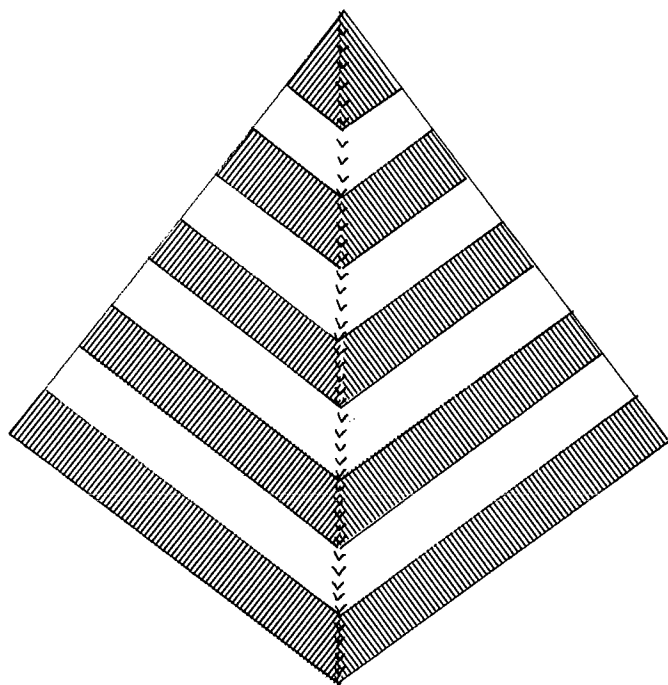
Pull needles one by one back into working position (C-position) starting with needle 2 from right side. Continue short rows till all needles are back into working position again. Finish with carriage on right side.

Knit 30 rows straight. Then start second corner exactly the same as the first one. Cast Off.

If one wants the collar to be slightly widened at the outer edge, one has to insert 2 or 3 little wedges at the back of collar, with short row method. (see Page 124/125). For instance: instead of 30 rows straight, knit 10 rows, insert a small double sides wedge over 4-4-4-4 needles, knit 10 rows, insert another gore. Knit 10 rows.

Crochet around outer edge: 1 single crochet, 1 chain stitch, alternated, 2 or 3 rows. Increase properly for the corner.

Mitred Corner (continued)

CHEVRON EFFECT**Exercise #2:**

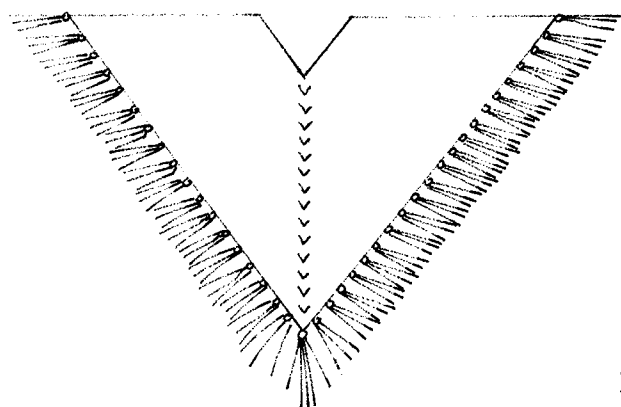
Phase I - Cast on 30 st.

Knit 3 rows (carriage is at left). Pull last needle at right into D-position. Knit with short rows back and forth (lever on I). Change colour from here on every 4 rows. *Pull next needle at right into D-position. Knit back and forth with short rows. *Repeat till all but one needle is in D-position. Do not forget to change colour every 4 rows.

Phase II: Put needles one by one back to working the following way: carriage is at left. The first needle is still in working position. Pull next needle into C position. *Knit carriage to right side. Wind yarn around last needle still in D-position. Knit back to left side. Pull next needle into C-position. (There are 3 loops on the needle). Repeat *. When you start going back, make sure your "Chevron hits the right spot". If you ended with 4 blue needles at left, start with 3 needles. Or in other words, change colour according to the colour of the first loop on the needle pulled back to C-position.

Mitred Corners (continued)

TRIANGLE CORNER WITH FRINGE



Exercise #3:

Cast on 2 st. at the left of 50 mark and 2 st. right of 0 mark.

*Knit to left. Pull one needle for increase at the right side (for the slanted corner) to B-position. Knit back and forth.

Repeat from * till you have 20 st.

Knit 30 rows. (Carriage at left).

Start corner: *Pull right end needle to D-position (Lever on I). Knit back and forth * Continue pulling out needles at right (for short row method) one by one, till all working needles are used up. Then work 2nd part of corner by pulling the needles one by one back to work (in C-position), starting at left end, till all needles are back in working. Knit 30 rows. Carriage should be at left.

Now decrease for slanted corner by transferring the end stitch at right one by one to the neighbouring needle. Knit back and forth after every decrease, till all stitches (except the fringe) are used up.

NOTE: The mitred corner does NOT work out as a 100% rectangle. It becomes a bit more pointed, but so would the rectangle itself. If a perfect rectangle is wanted, one has to calculate the corner differently, which then never looks as neat, or one has to block it to a 90° angle. The fringe has to be knotted.

Mitred Corners (continued)

THE PERFECT SQUARE, KNITTED DIAGONALLY IN SHORT ROWS

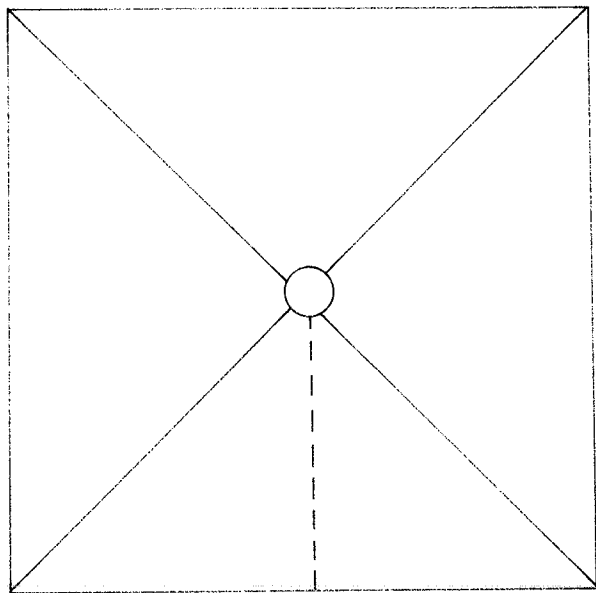
Exercise #4:

Measure the diameter of the wanted square, divide it by two. Then multiply it by the number of stitches per 5 cm gauge, and add one stitch.

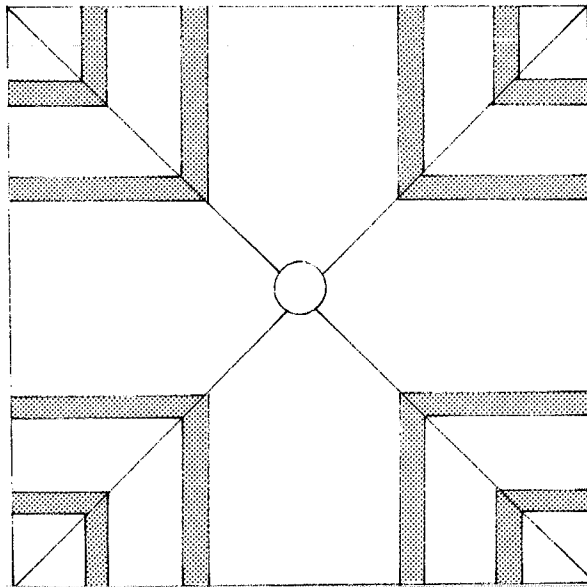
Cast on the necessary amount of stitches on contrast yarn, knit a few rows and change to main yarn. (Front lever on I). Knit back and forth.

Pull one needle opposite carriage side into D-position. Knit back and forth. Continue knitting with short rows decreasing one by one, till all needles are in D-position. Then knit them back one by one again.

Start next corner immediately and repeat till all 4 corners are done. Take off on contrast yarn and graft the square together.



See Page 166 for size of knitted square.

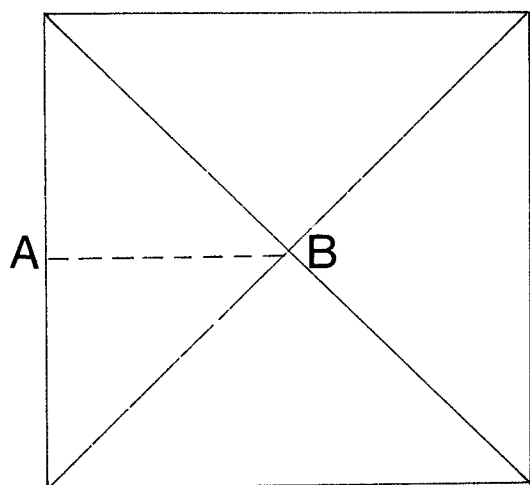


For Chevron effect change colour at the returning short rows, where the needle has 2 different colour loops on.

Mitred Corners (continued)

BIG SQUARES OR OBLONG SHAPES

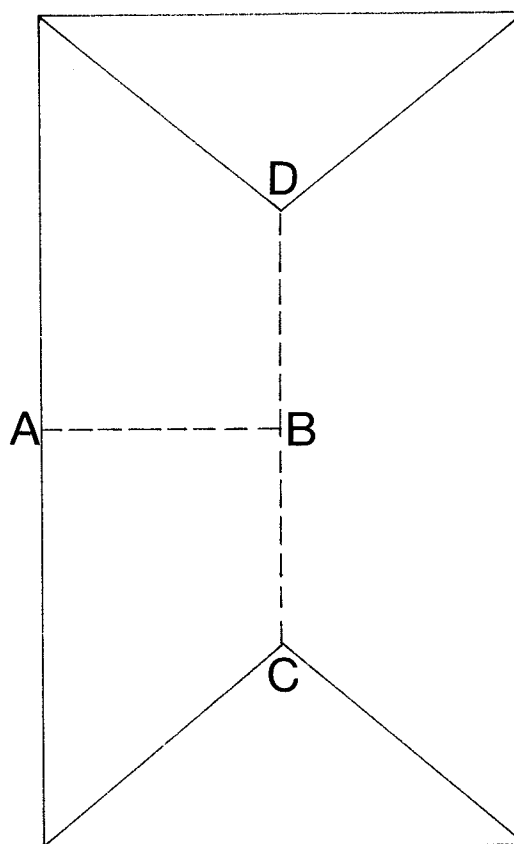
You can knit big squares or oblong shapes for shawls or bedspreads all in one part, with a horizontal graft between A and B and a vertical graft between C and D.



A square using 100 needles makes a size of approx. 84x84 cm.

A square using all 200 needles makes a size of approx. 167x167 cm.

The 100 needle square used up approx. 10 oz. or 300 gr. of a fine 4 ply wool, knitted on Tension 7.

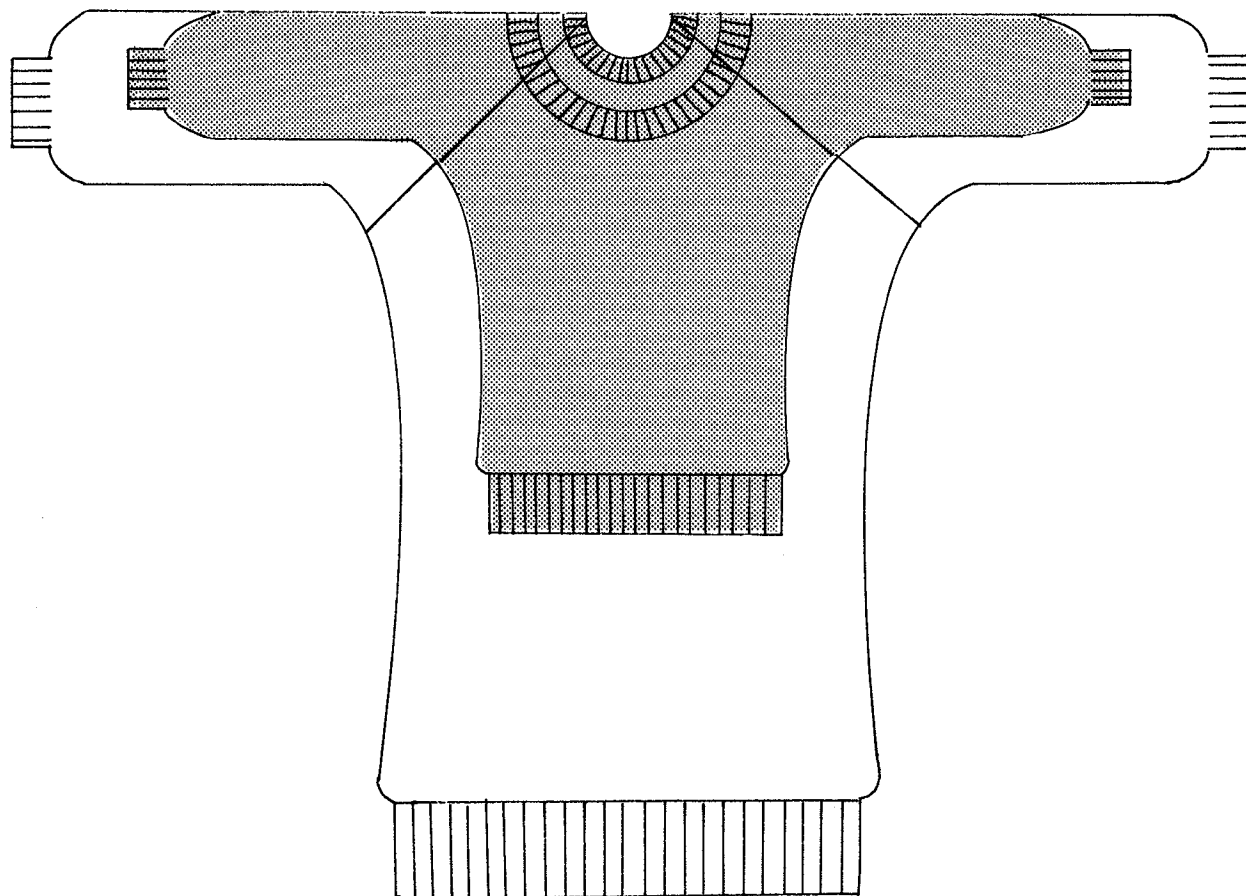


One can also knit an oblong shape, which then has to be also grafted vertically in the center. Using 200 needles, one gets an approximate width of 167 cm. The length has no limitations.

notes

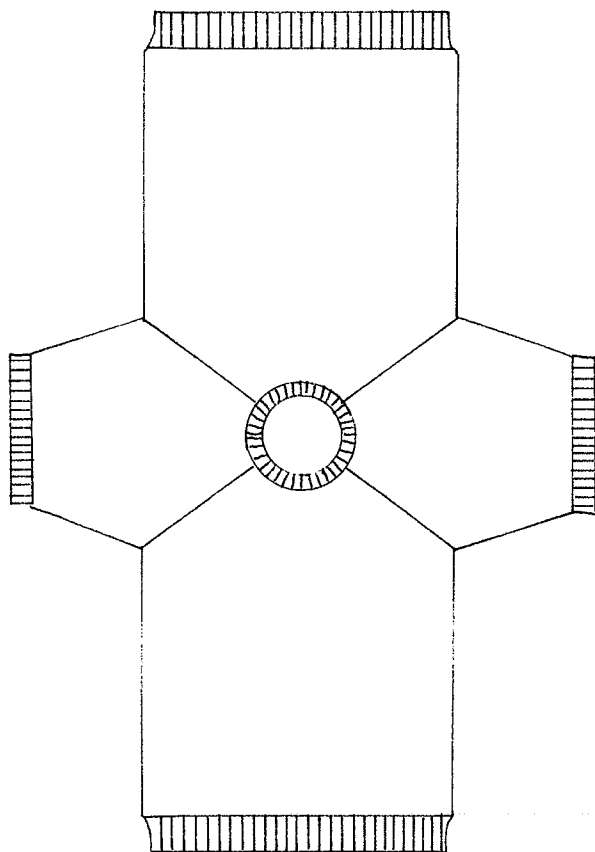
RAGLAN SWEATER KNITTED IN SHORT ROWS

1. Raglan sweaters can be knitted many ways. Naturally one can construct a raglan pattern, calculate it, then knit the parts to shape, and sew them together.
2. We have also a way to knit the whole raglan seamless (with only a sideseam), in one piece. This way, front and back are equal, except for the neck line, but it pulls completely into shape because knit is so flexible. See exercise "Mini-sweater". Page 168.
3. If we want to make a full sized raglan sweater, we enlarge in the same proportions. The raglan line is always a one by one decrease with short rows. From baby-size to man-size, it is the same basic construction.



This is the classical English raglan sweater.

"MINI" RAGLAN



Exercise for a "Mini-sweater" knitted with short rows, all in one piece. We start knitting the back first.

Cast on 18 stitches on every other needle. Knit double welt on tension 3 over 20 rows. Knit 30 rows over all 36 needles on tension 7 or 8. Cast off 3 stitches each side for armholes.

Start raglan with short rows, by pulling the needles on both sides one by one into D-position (front

lever on I) till 12 stitches are left in center for the neck. Cast off the 12 neck stitches or drop them on contrast yarn, then, with separate yarn take off the raglan sides each separately on contrast yarn.

Begin the front the same way till raglan starts. Cast off 3 stitches each side. Continue knitting 8 short rows - 4 needles are each side in D-position (row 60). Carriage is at right.

Now start the neckline. We are knitting the right neck part first. Pull all needles left side of 0 plus 2 needles right side of 0 into D-position. Continue knitting with short rows, pulling the needles

Mini Raglan (continued)

one by one on both sides of the right section, till only one stitch is left, which is knitted through by hand. Break thread. Pull the 9 needles at raglan side to C-position and knit them off on contrast yarn. Neck stitches remain on machine.

Slip carriage to the left side. We are now knitting the left section. Leave in D-position: The 4 raglan needles at left outside, the 6 needles right of 0 plus 2 needles left of 0. Push the remaining 9 needles to C-position and knit with short rows one by one on both sides the left neck part correspondingly. All needles are in D-position. Bring carriage to left side. Push all 12 neck needles (6 each side of 0) into C-position. Knit one row over them and cast them off or drop them on contrast yarn. Leave the 9 raglan stitches on the machine. The carriage is at right side (if not, bring it to the right).

Add at neck side 6 empty needles (for the shoulder). Put the corresponding raglan section of the back (9 needles) on to the machine, watching that you have 2 loops for each stitch, but watching even more carefully that you really have the corresponding raglan side. Both neck parts have to point to the inside.

We are now starting the sleeve "upside down". Leave the 9 raglan needles of both sides in D-position, pull the 6 empty needles between them to C-position. Wind yarn around those 6 needles, from left to right. Push the first inside D-position needle of the left group into C-position. Knit to the left. Wind yarn under last needle. Push first inside D-position needle of the right

Mini Raglan (continued)

group to C-position. Knit to the right. Continue knitting all raglan stitches one by one on each side back to work, always looping under the next D-position needle. When all stitches are used up, add each side 3 stitches for the under arm. (30 st. total). Knit 10 rows straight, decrease one **stitch** each side, knit 10 rows straight, decrease one other time, knit 6 rows straight. Transfer every other stitch to the neighbouring needle. Transfer last stitch at left one needle outside. Leave empty needles in A-position. We have 14 stitches on every other needle. Change tension to 3 and knit 16 rows for cuff. Cast off.

Now, before knitting the second sleeve, we have to knit the neckline of the sweater first. We put all neck stitches back to the machine. This time the knit side of the sweater facing us, because we want to fold the mock rib to the outside. Wind on another 6 stitches for the second shoulder from left to right. We should have 36 stitches. Knit one row to the left, transfer every other stitch. Leave empty needles in A-position and knit the double mock rib as long as wanted (for a small band 10 to 12 rows). Take off on contrast yarn.

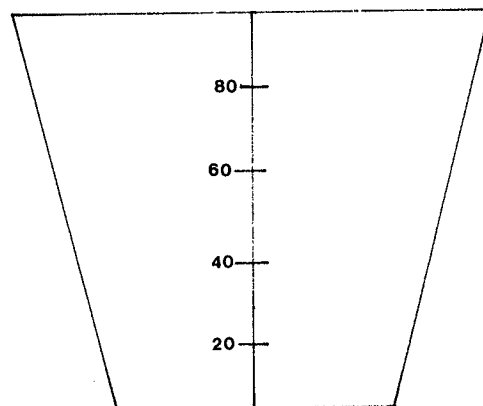
Finally we knit the second sleeve to correspond. Put both raglan sides and the 6 shoulder stitches on to the machine. The sweater is purl side up. Watch that the sweater parts do not get twisted. Close side seams, first of sweater, then of sleeve. The 3 added stitches are sewn or grafted Bodice to Sleeve to form the "Under arm". Graft neckline to outside and slipstitch sleeve cuffs to inside.

CALCULATION OF STITCHES AND ROWS

Proper calculation is a very important factor, to make our knitted garments look their best. The "Cut and Sew" method, which the industry mainly uses and with which we started, is not always suited for boutique work, especially not if one wants to label a garment "Hand Made", which we still can, with our handknitting machine, providing we knit "to shape". That means CALCULATION. Some machines have a built in, so called "Radar", which shows where to increase and decrease, but nevertheless it is essential to know how to calculate.

First we do a little brain exercising and try to calculate a shape 15 x 30 x 25 cm. The given gauge is 14 stitches and 20 rows per 5 cm. See how close you can come. The work sheet is next page. Then I explain the different steps necessary to calculate a sweater:

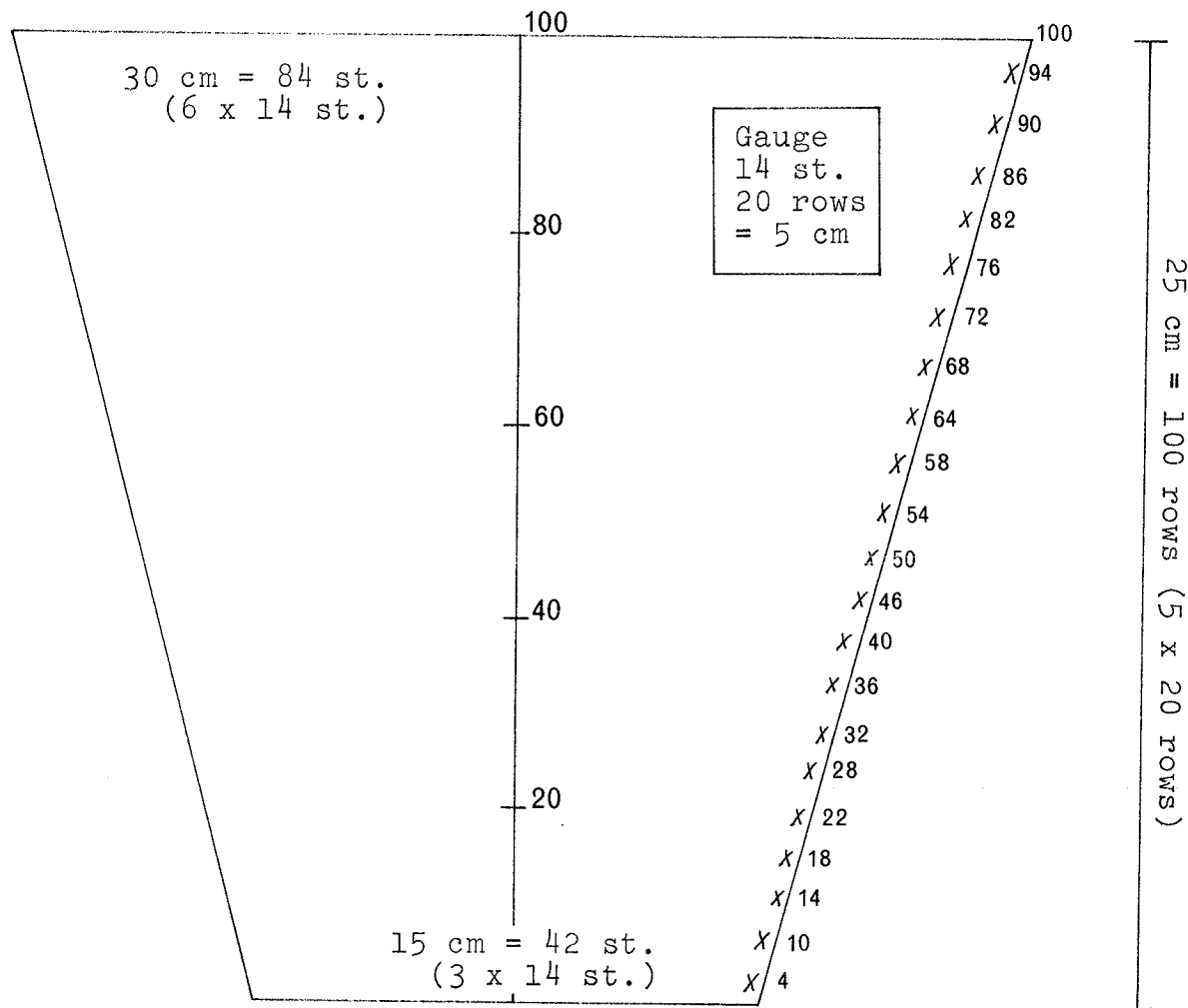
1. The calculation of width and length
2. The calculation of an armhole
3. The calculation of a neckline
4. The calculation of a shoulder
5. The calculation of a sleeve
6. The calculation of a sleeve crown



The example I use is a sweater, but every other knitted piece would be basically calculated the same way. One thing is important to keep in mind: stitches and rows are always at right angles to each other. All auxilliary lines, which we draw into our pattern therefore have to be at a 90° angle to each other.

NOTE: We always knit back and forth for each increase or decrease. That means that only every two rows do we have the possibility of increasing or decreasing at the same side, to alter our shape.

Calculate a shape 15 cm x 30 cm x 25 cm.

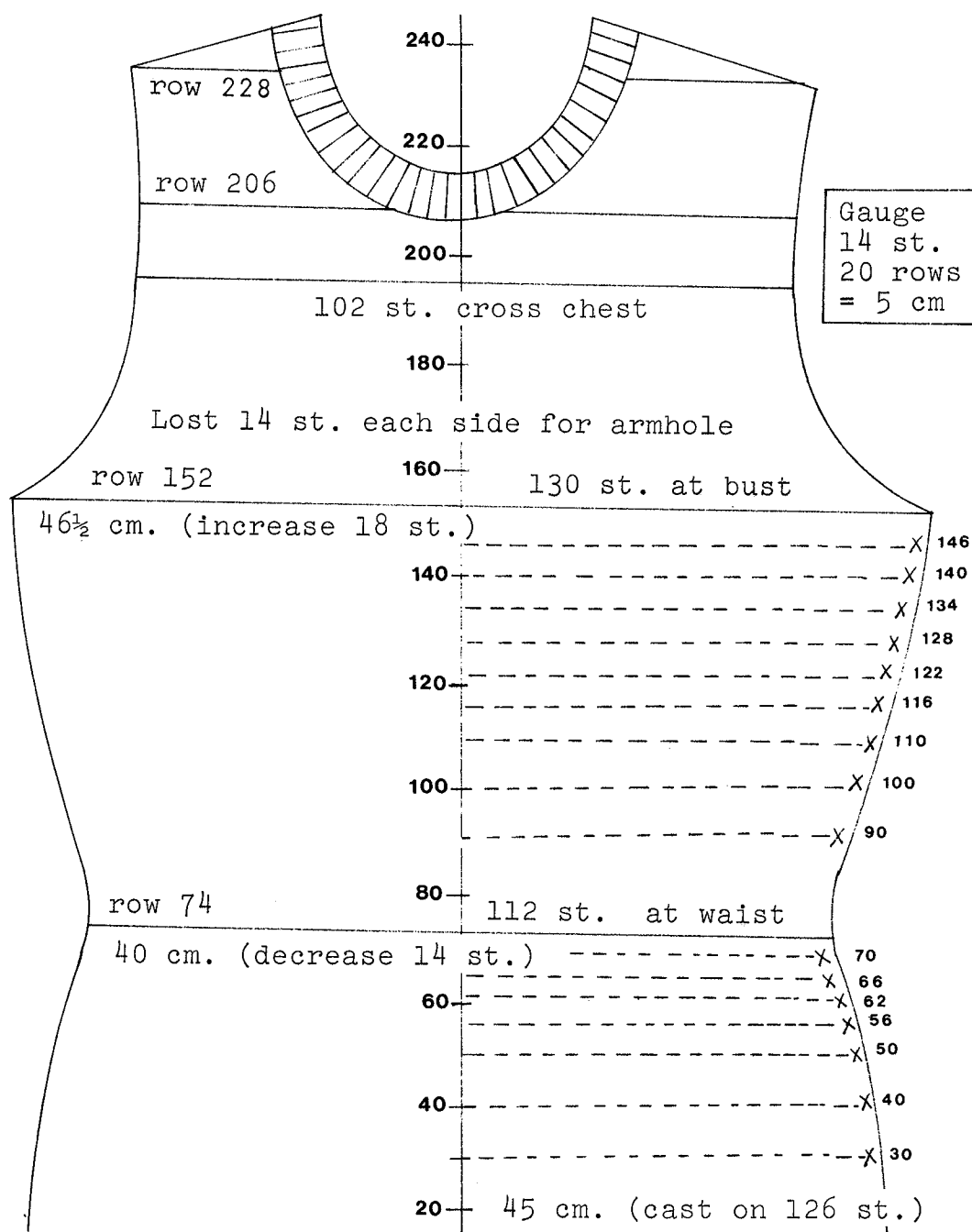


This is an increase of 21 st. each side. To distribute them evenly we divide 100 rows by 22 sections. Why 22? We have 21 increases but 22 sections, because there is one section at the beginning and one section at the end.

100 rows divided by 22 sections = $4\frac{1}{2}$ rows. How can we space our increases $4\frac{1}{2}$ rows apart? Since we cannot knit $4\frac{1}{2}$ rows between each increase, we knit 4 rows between, but each time are half a row short. After 4 increases we will be short of 2 whole rows, which we have to add to every 4th section.

We therefore space the increases 3 x 4 rows apart and 1 x 6 rows, and continue to alternate.

Calculate Length and Width



Take the paper pattern and draw a vertical center line. Mark it every 5 cm. Since our gauge has 20 rows per 5 cm., our center line is marked 0-20-40-60 etc. If we have 22 rows per 5 cm, it would read: 0-22-44-66 etc. because our marks represent the number of rows, equalling 5 cm.

continued next page

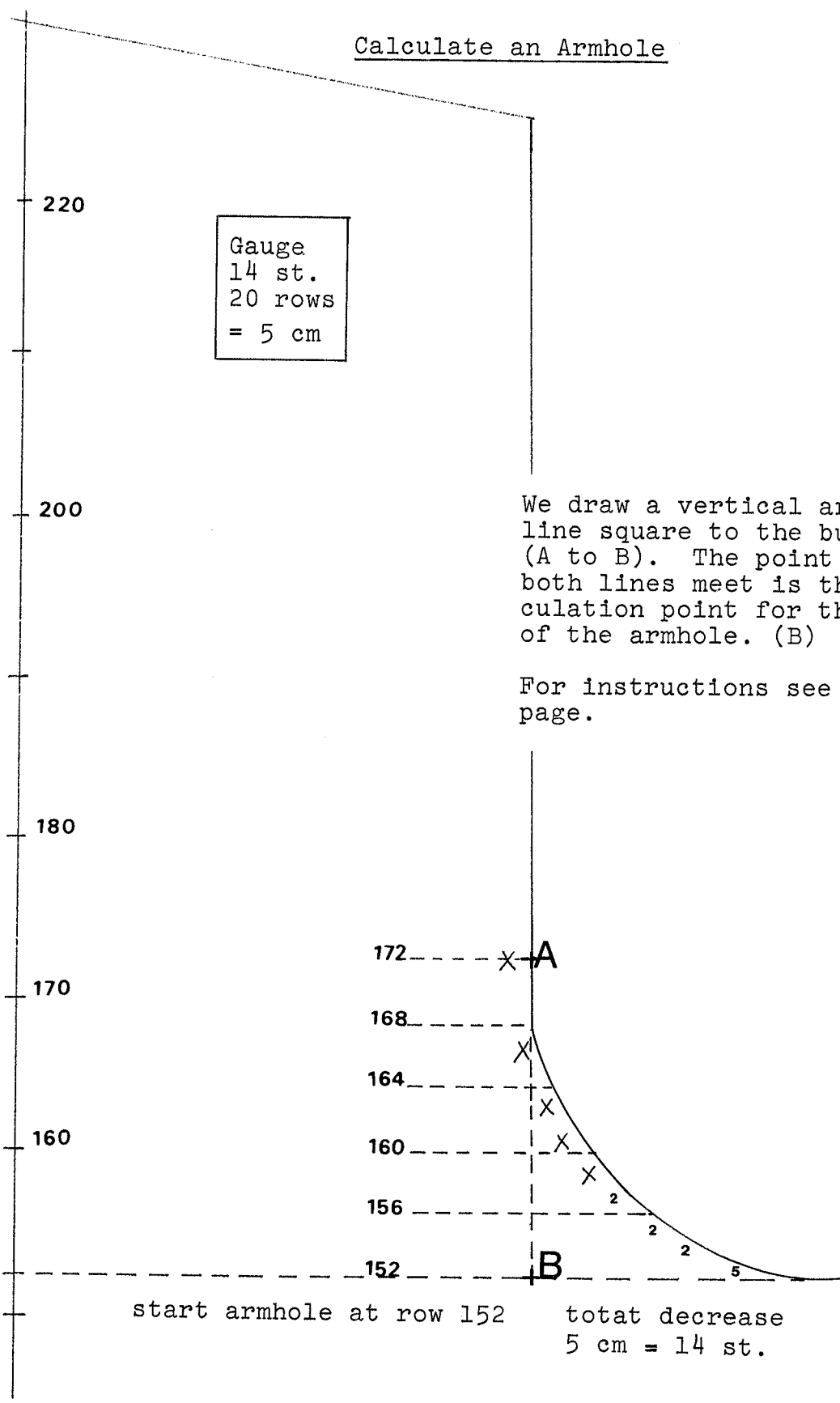
Calculate Length and Width (continued)

Now we draw horizontal lines on all strategic points, such as waist, bust, cross-chest, shoulder. We divide our cm. measurement by 5 and then multiply by 14 (because our gauge is 14 st. to 5 cm.) in order to find out how many stitches are needed. Mark all the numbers of stitches on your pattern. Our hip measurement is 45 cm. $45 \div 5 = 9 \times 14 = 126$. So, we need 126 st. for our cast-on. To find out how many stitches we have to decrease for the waist measurement, we deduct the amount of waist stitches from the cast-on stitches and divide by 2 on our sample: $126 \text{ st.} - 112 \text{ st.} = 14 \text{ st.}$ This gives us 7 st. to decrease each side. Since we want to achieve a curved line, instead of a straight line, we DO NOT distribute our decreases evenly, but closer toward the waistline. We mark the decreases with an "x" at the outside line, take our ruler or right angle and square them from the center line, to find out the exact row where we have to decrease. Mark that row besides the corresponding x mark.

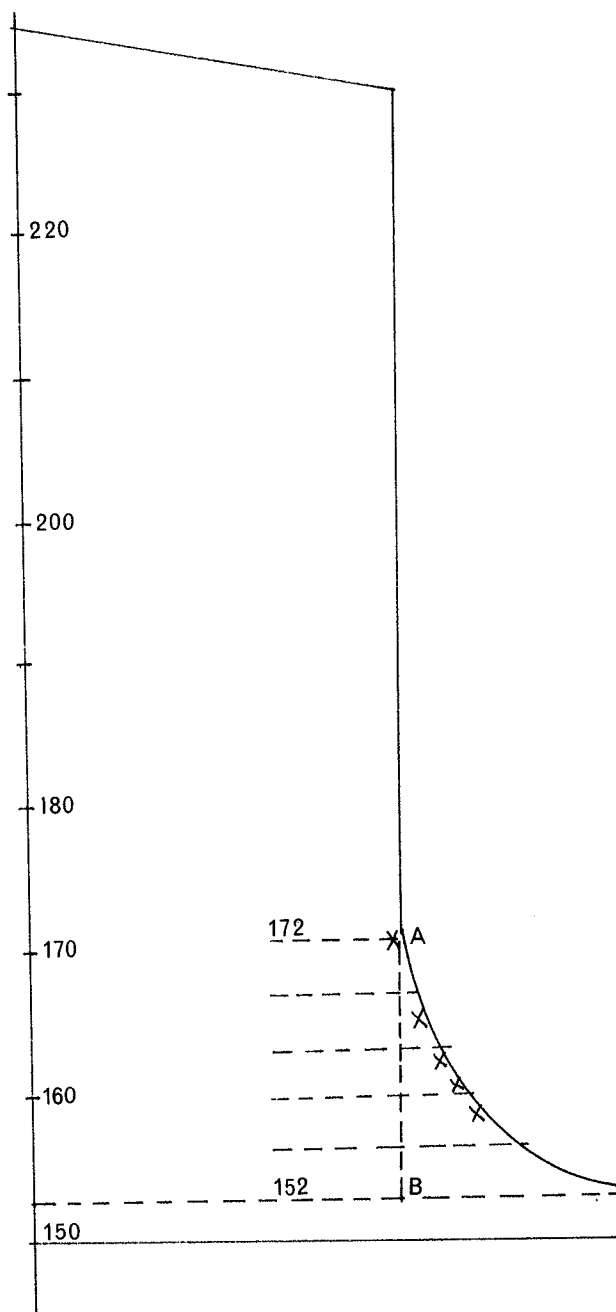
For the bust measurements, we have to increase. We deduct the amount of waist-stitches from the number of bust stitches. On our sample: $130 \text{ st} - 112 \text{ st} = 18 \text{ st.}$ Divided by 2 gives us 9 st each side to increase. Again we distribute them unevenly, but closer to the bust, according to our pattern. Naturally that varies with every pattern shape.

The calculation instructions for armhole, neck, shoulder and sleeve are given as extra details.

Calculate an Armhole



Calculate an Armhole (continued)



The total decrease for the armhole, according to this pattern, is 5 cm or 14 st. (see the above gauge). Please note that we have to decrease in a curve and not in a sharp corner or an even slant. The whole decrease takes place between row 152 and row 172 on this sample. It is not an even distribution, to achieve the curve, we have to decrease in the beginning faster. If 5 cm = 20 rows, 1 cm = 4 rows or 2 opportunities to decrease. In the 1st cm we can lose 7 st., 5 in row 152, 2 in row 154.

In the 2nd cm we lose 3 st. 2 in row 156 and 1 in row 158.

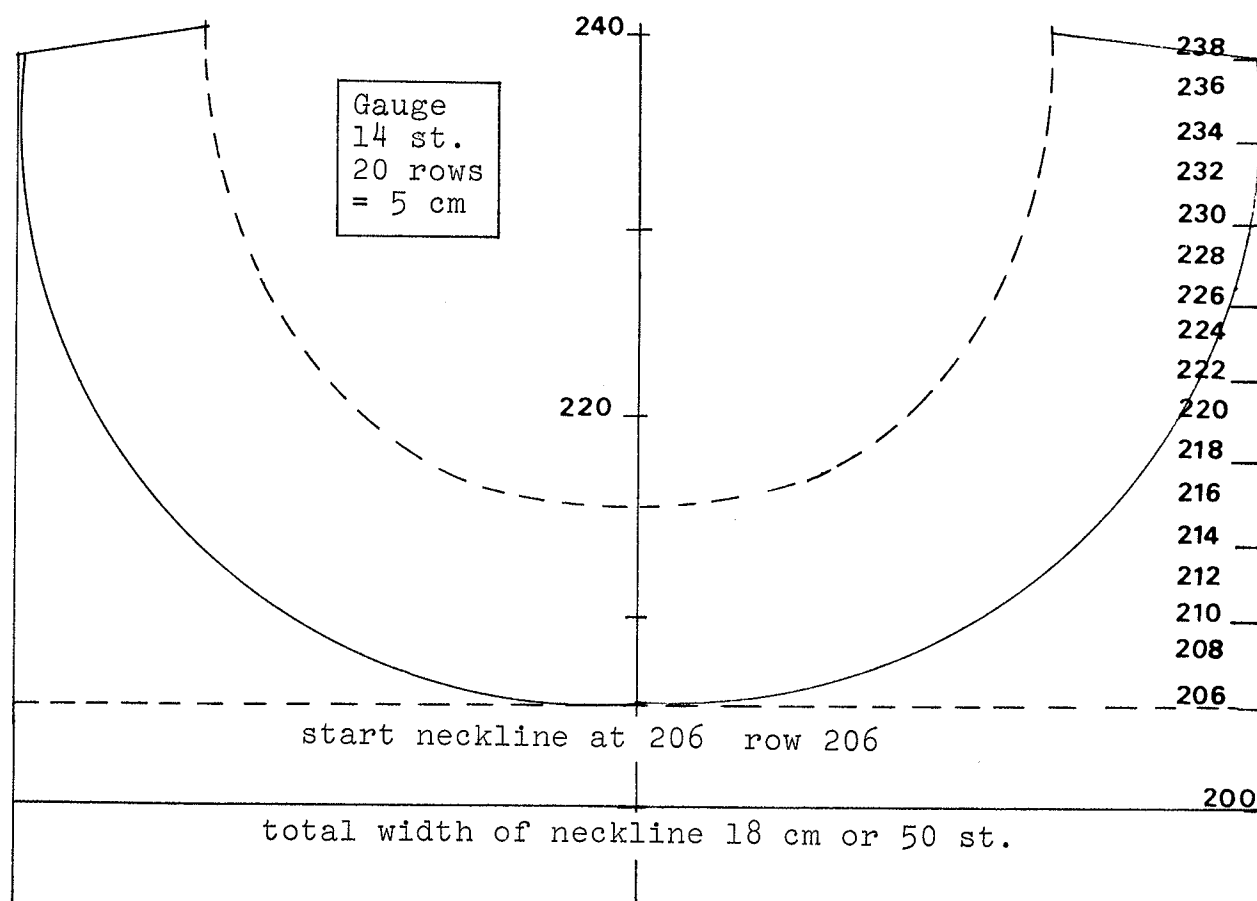
In the 3rd cm we lost 2 st., 1

in row 160 and 1 in row 162. In the 4th cm we lost only 1 st.

in row 166. In the 5th cm. we lost the last st. at row 172.

That makes 14 st which we have decreased in 20 rows. It gives us an average armhole. Different pattern shape and different gauge has to be calculated accordingly.

Calculate a Neckline



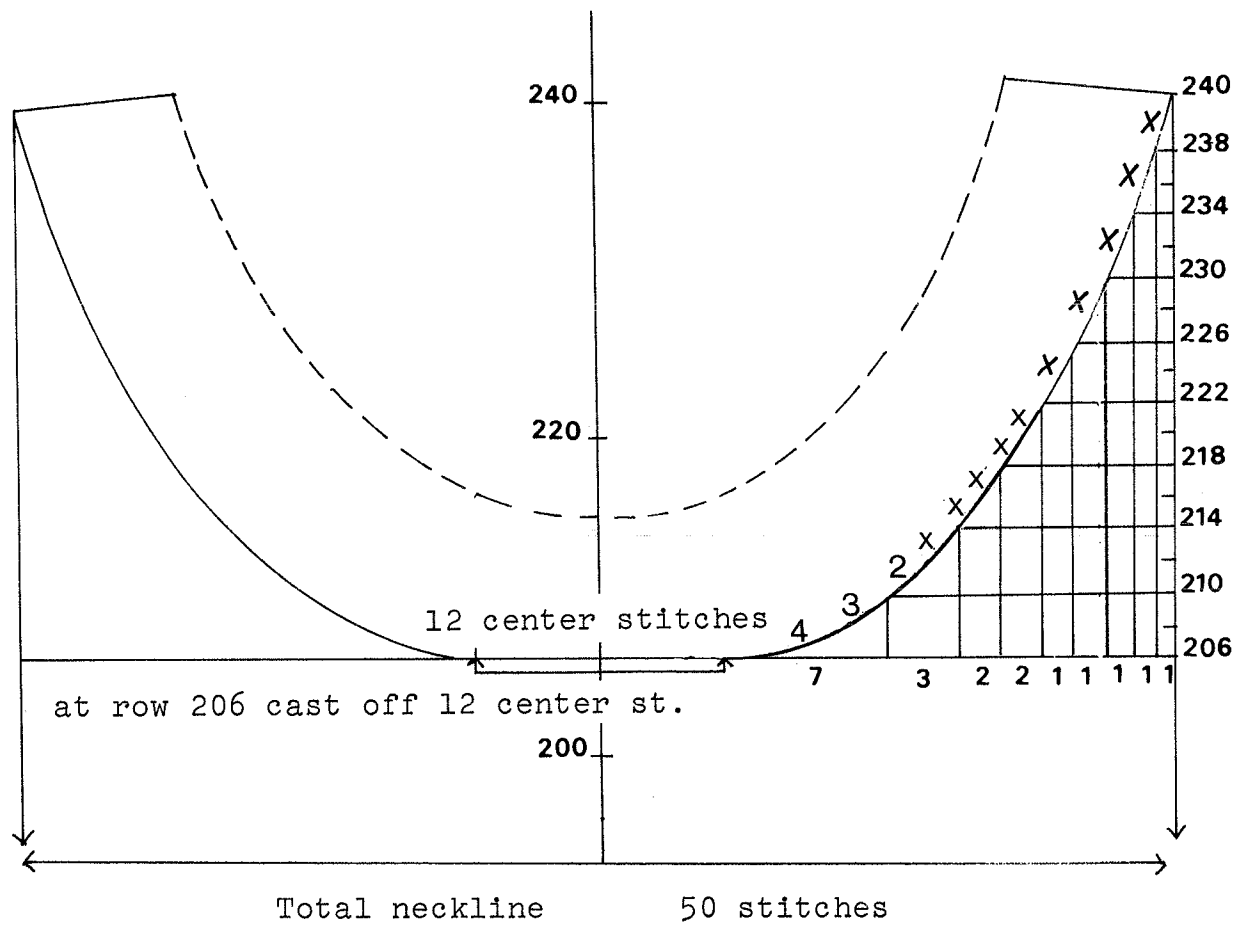
14 st. = 5 cm.
42 st. = 15 cm. (3x14)
3 st. = 1 cm. (approx.)
18 cm. = 50 st, based on
our gauge.

On our pattern we have 102 st.
across chest. We draw a hori-
zontal line, where the neckline
starts and mark the row on our
pattern. (on our sample, row
206).

We now draw 2 vertical lines
square to the horizontal, down
on both outer edges of the neckline (from shoulder point).
This will give us the total width of the neckline. On our
sample it is 18 cm. equalling 50 st. Deduct 50 st. from 102 st.,

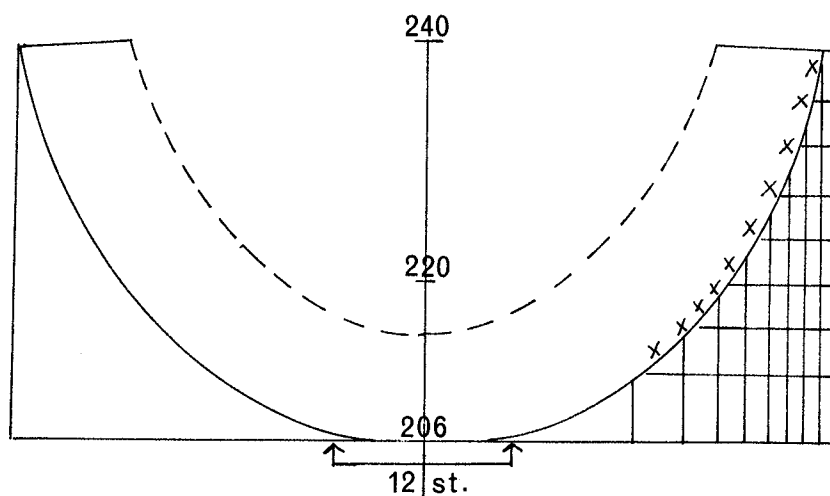
Calculate a Neckline (continued)

leaves us with 52 st. for both shoulders. 26 st. for each shoulder. Mark on pattern.



The center portion of our neckline is straight. 2 cm each side of center. That gives us 4 cm or 12 st. to cast off. To shape the curve for the neckline we have to decrease accordingly. We

continued next page

Calculate a Neckline (continued)

mark each cm on our vertical neck outline and know that 1 cm = 4 rows or two possibilities for decrease according to our gauge. We draw first horizontal lines through each 1 cm marking and then vertical lines down from each point where our horizontals touch the neck curve. Each section represents the amount of stitches which we have to lose in 1 cm heights or in 4 rows.

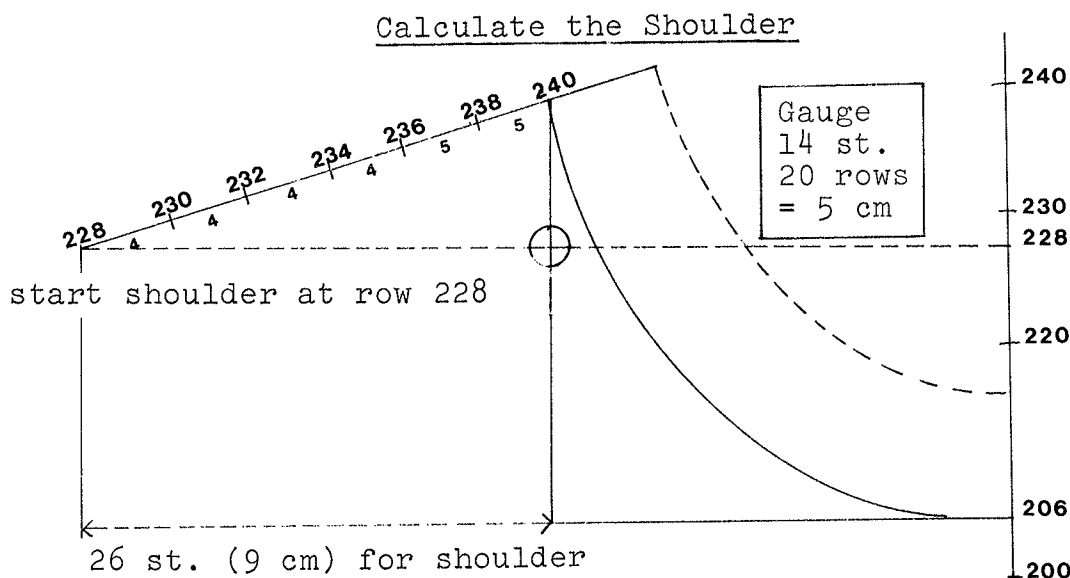
In the first cm we have to lose 7 st. We distribute them: 4 on row 208, 3 on row 210.

In the 2nd cm, we lose 3 st. We distribute: 2 on row 212 and 1 on row 214.

In the 3rd and 4th cm, we lose 2 st. each section or 1 st. on each decrease row - 216, 218, 220, and 222.

In the following 5 cm we have to lose another 5 st. That makes 1 st. each cm, or every 4 rows. We decrease 1 st. on row 224, 228, 232, 236 and last, at row 240.

Each neckline is different and has to be calculated according to shape and gauge.



We have already drawn a vertical line down from the neck edge to calculate the neck-curve. Now we draw a horizontal line from the lower shoulder edge, square to this vertical line. The point where they meet is our calculation point ($\oplus$). We have 9 cm or 26 st. (according to our gauge) for the shoulder. (We always measure the rectangles, never the slants).

This point also gives us the row to start the shoulder.

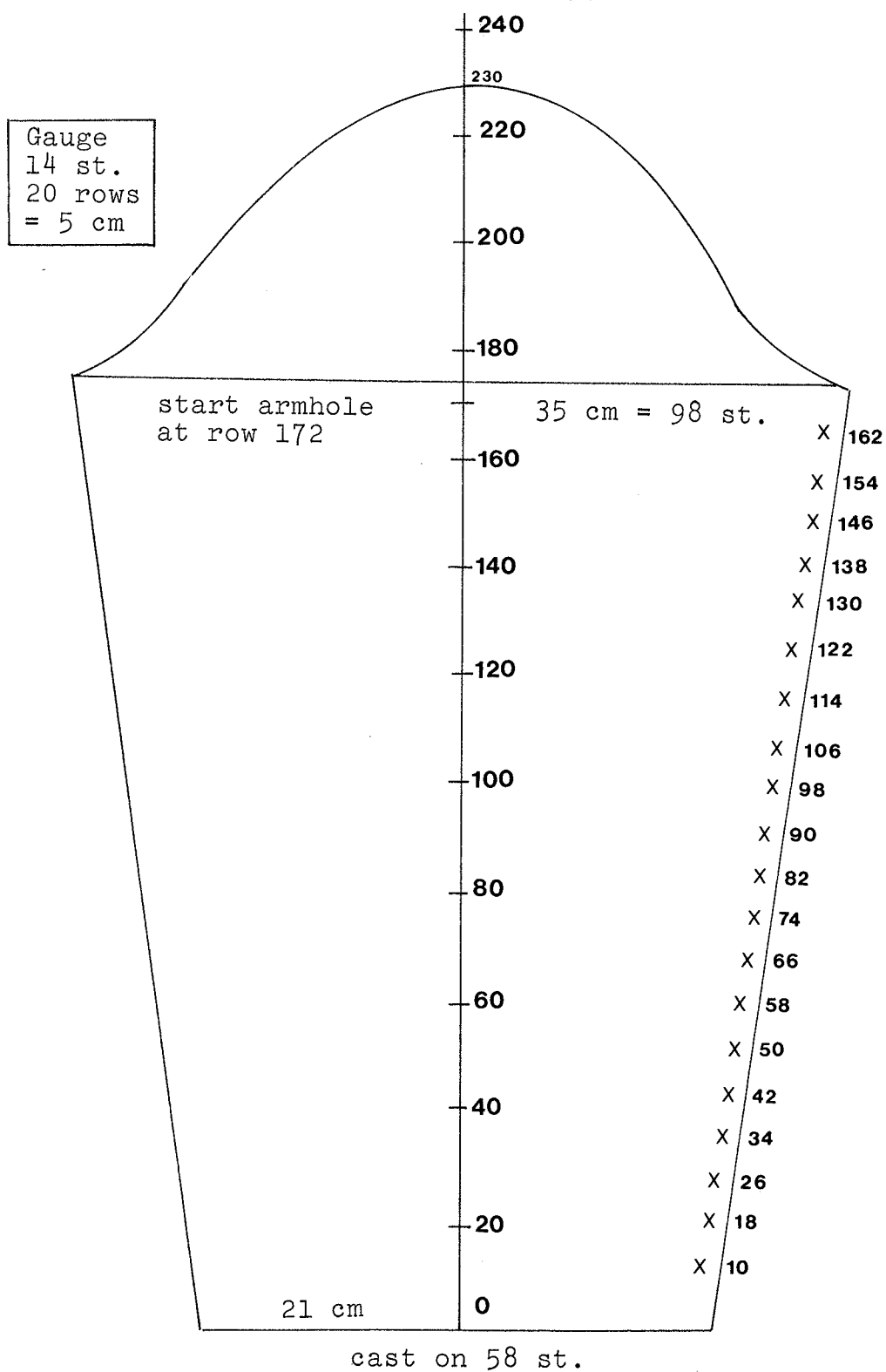
Our shoulder slope is 3 cm = 12 rows. That gives us 6 decrease possibilities or decrease sections.

We have 26 st. to deal with. We divide the amount of stitches through the decrease -possibilities or decrease - sections.

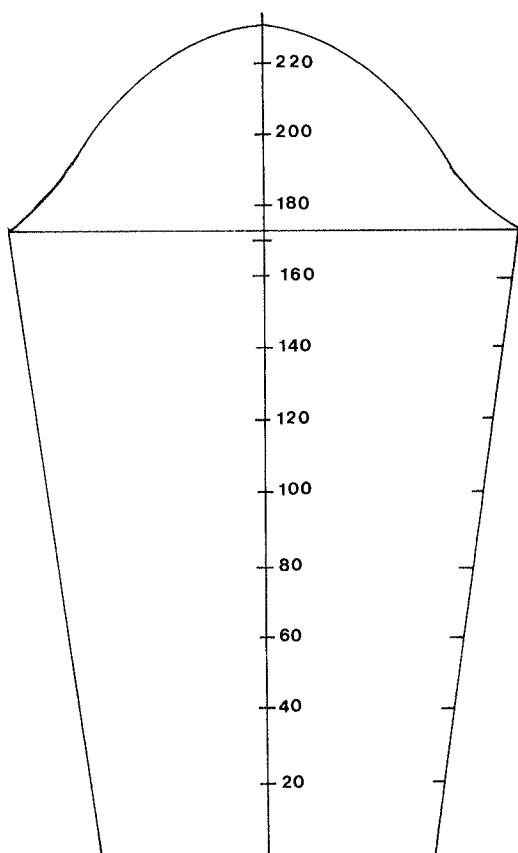
26 st. $\div$ by 6 sections = 4, 2 left. That means we have 4 sections with 4 stitches each and 2 sections with 5 stitches each.

Since we have one right and one left shoulder, we start our decrease at one side on the even numbered row, at the other side on the uneven numbered row.

Calculate the Sleeve



continued next page



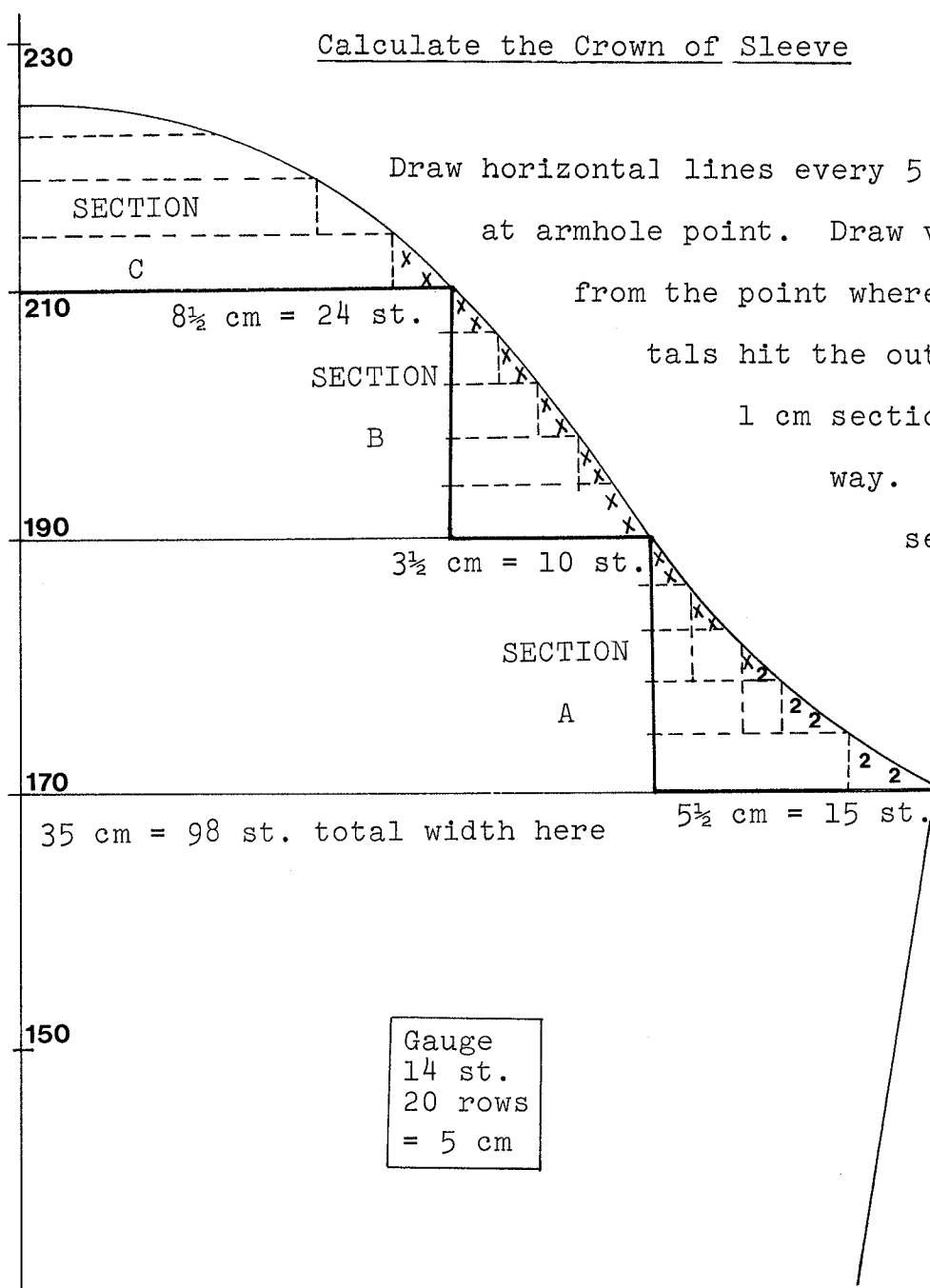
Calculate the Sleeve (continued)

Draw a center line and mark your rows every 5 cm, as we have learned. Divide your bottom width by 5 and multiply with your stitch gauge to find your cast-on. Our sample: $21 \div 5 \text{ cm} = 4.2$. $4.2 \times 14 = 58 \text{ st.}$ (your cast-on). Draw a line across top width. Divide width by 5 and multiply by stitch-gauge. Our sample: $35 \div 5 = 7$, $7 \times 14 = 98 \text{ st.}$ Subtract bottom width from top width and divide by 2. That gives you the amount of stitches to be decreased each side. On our sample: $98 \text{ st.} - 58 \text{ st} = 40 \text{ st.}$ Therefore 40 st.

$\div 2 = 20 \text{ st}$ to be increased each side. We distribute them evenly. $170 \text{ rows} \div 21 \text{ "spaces"}$ (20 increases!) = 8, 2 rows left. That means an increase every 8 rows. The 2 extra rows are added to the first or bottom space. We mark our increases at the right outline of our pattern, starting at row 10 and marking 20 "x's" every 8th row. We end with our increase at row 162 which gives us 10 more rows to knit straight over it. Never put your last increase too close to the edge, because it cannot materialize any more and is lost in the next phase of shaping (in our case the sleeve crown).

This takes care of length and width of sleeve, the crown calculation will be on extra sheets, page 183 and 184.

Naturally this calculation matches only our sample pattern. It will change with sleeve shape and different gauge.



Draw horizontal lines every 5 cm starting at armhole point. Draw vertical lines from the point where the horizontals hit the outlines. Mark 1 cm sections the same way. Calculate section by

section.
 We have 20 rows per every 5 cm, or 4 rows per 1 cm. In every cm. section we have 2 decreases.

After crown has been calculated, recheck by adding all decreases together (both sides). This should make up the same amount of stitches as width of sleeve. Adjust if necessary.

Detailed calculation see next page.

Sleeve Crown - Details of Calculation

- Section A: We have to lose 15 stitches each side in 20 rows, which gives us 10 decrease-possibilities (one every other row). Since we have a curve, we cannot distribute them evenly, but have to place them more frequently at the beginning of the curve. We have divided section A into 5 one cm "sub-sections", each consisting of 4 rows or 2 decrease-possibilities. In the 1st cm section: we lose 4 st. We decrease 2 stitches twice. In the 2nd cm section: we lose 4 st. also. Again 2 stitches twice. In the 3rd cm section: we lose 3 st. We decrease 2 st. in the 1st decreasing row and 1 st. in the 2nd. In the 4th cm section: we lose 2 st. We decrease 1 stitch every other row. In the 5th cm section: the same as the 4th cm section.
- Section B: We have to lose 10 st. which we can distribute evenly 2 st. in each cm or 1 st. every other row.
- Section C: We now have to shape the top of the crown. We have only 4 cm in length left, or 16 rows, in which we have to lose 24 st (each side of center). In the 1st cm we lose only 2 st which is 1 st every other row, same as in Section B. In the 2nd cm, we lose 4 st which is 2 st every other row. In the 3rd cm we lose 7 st. We cast off 3 st at a time and 4 st the other time. In the 4th, or last cm, we have to lose all our stitches (should be 22 altogether). We cast off 4 st each side and then the last 14 st together.
- Each different shape, each new yarn or different gauge has to be calculated individually.

notes

1. What forms a "Tuck"? A "tuck" is a stitch which is not knitted, but looped over the needle. If we tuck over the same needle for several rows, we are bunching up the loops on those needles, instead of knitting them. Nevertheless, after two, three, four or even six rows, we have to knit all those loops back in, in order to maintain a fabric.
2. The different patterns are formed by the distribution of tucked stitches, alternated with plain knit stitches, and by the amount of rows, tucked over the same needle, before being knitted back in again. The more rows one bunches up on one needle, the more it "tucks" and pulls the fabric together, which is part of the "tuck" design.
3. How do we achieve the "tucking"? One way is to pull the designated needles out to D-position by hand (front levers on I), Cam dial on stockinette. We knit the wanted amount of rows "tucked", then, with the help of lever II, we knit all the collected loops back in again and alternate or repeat the pattern. Just to mention once more: The D-Position Needle tucks the B-position needle knits, if Dial is on stockinette and needles are pulled by hand.
4. Never start "tuck" right from the cast-on, always knit a few rows straight before starting a tuck pattern.
5. If not wanted for any special purpose, one should alternate the "tuck" in order to balance the pull and even out the fabric. If the tuck pattern is worked by hand, one has to stagger the tuck needles. Later on, when we design a card for tuck, we have to take that into consideration.
6. It is advisable to knit one row straight over the bunched up needles, before starting the next row of tucks. Nevertheless, for tuck pattern, where alternation occurs, without having a straight stockinette row in between, the tuck needles have to be pushed into C-position by hand, and at the same time, the new tucking needles have to be pulled out to D-position. Remember, we are still pulling our tuck needles by hand. Later on the punch cards will take care of that automatically.

7. Tuck works best on single needles repeated in the pattern, but with some skill, one can tuck over groups of several needles for different effects. Tucking over 2 or 3 neighbouring needles, this only works well occasionally, depending on the yarn and the tension. But it does not work at all if one has too many needles tucked beside each other.
8. The gauge in tuck pattern is very difficult to calculate and varies a lot. It depends horizontally on how many stitches are tucked in a row and vertically over how many rows the stitches are tucked or how many plain rows are between the tucks. Therefore one has to measure how many cm equals a sample of 40 stitches and 60 rows or work it out as for the knit radar, if your machine has one. Most tuck patterns shrink considerably in length and widen in width, compared to regular stockinette knit. One really has to watch the gauge.
9. Tuck in plain knit is mostly used on the purl side, because the pattern appears stronger there. Tuck with different colours forms all kinds of interesting patterns and is used on either side.
10. The tension is also a very important factor in tuck knitting and can make such a difference in the same pattern, that one hardly recognises it if one changes the tension. In general, tuck is knitted one number looser on your tension dial than you would normally knit the yarn. If tension 7 is used in plain knit, I would take tension 8 for the same yarn in tuck knit. But there is NO FIXED RULE, and it is often the unusual which creates the most interesting designs. One has to experiment! Each yarn also acts differently, and has to be tried out. For the new "open look" in tuck pattern, for instance, one uses fine yarns, cotton, linen, or mixtures and knits on a very loose tension, to create the light airy effect. The same pattern, though knitted with regular 4 ply wool on tension 7 or 8 gives a very "sportive" looking structural pattern. I give you 6 different tuck patterns, which you can punch continuously onto your cards and use for this look in fabric. See page 190/191.

Tuck Patterns (continued)

11. Before we start knitting tuck pattern, we have to instal the little extra brush wheels called "tuck-brushes" which come with the accessories, as well as the yarn separators, which help to prevent the first stitches of each row slipping off. It occurs very easily in a tuck and can ruin the whole pattern or make the knit fall off. One also has to knit with weights.
12. So far we have explored the method of pulling the tuck needles by hand. We use it for:
 - a) Tryouts, for designing tuck pattern and playing with different combinations, till we have established the pattern we want to use. Then we will punch a card for a continuous pattern, which I will explain in the next chapter.
 - b) For tuck pattern which has a repeat that does not fit into our 24 stitch punch card system.
 - c) For irregular pattern or single motifs.
 - d) For fabrics which require a plain knit border on the sides.
13. The effects we get with tuck pattern are very different from each other, depending on the type of yarn, the tension, the needle position or the use of different colours. I sum it up once more:
 - i) We get "raised" effects on the purl side. Page 193 & 194.
 - ii) "Quilted" effects on the knit side, if pattern is turned.
 - iii) "Airy" effects when knitted on very loose tension with fine yarns. Page 190/191.
 - iv) "Structural" effects on regular tension. Page 194.
 - v) "Interesting multicoloured" effects when using more than one colour. Page 194.
 - vi) "Lace" effects, if combined with needles in A-position (which do not knit, but create floats). Page 218 & 220.
 - vii) "Fisherman Knit" effects if worked on every other needle with heavy yarns. Page 192/193.

notes

EXERCISES FOR "TUCK" ----- BY HAND AND BY PUNCH CARD

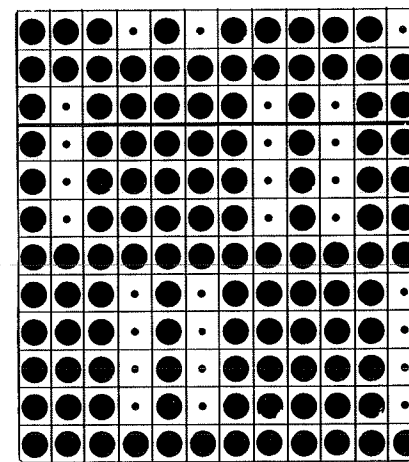
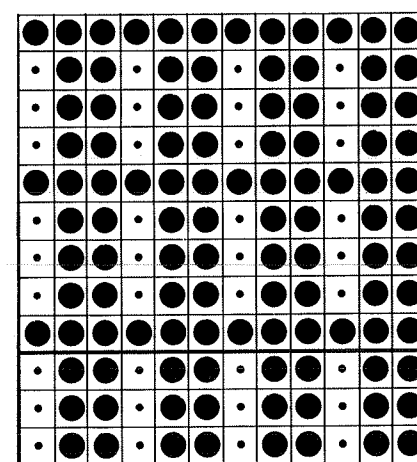
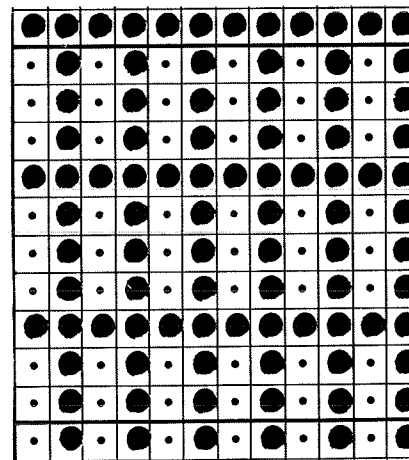
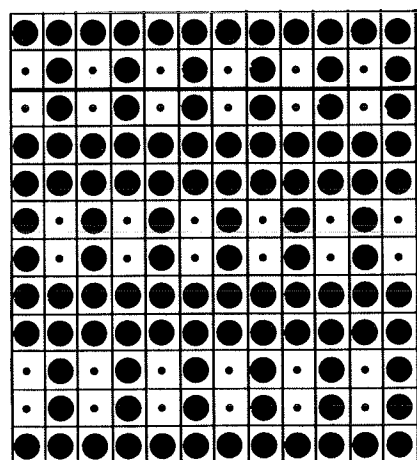
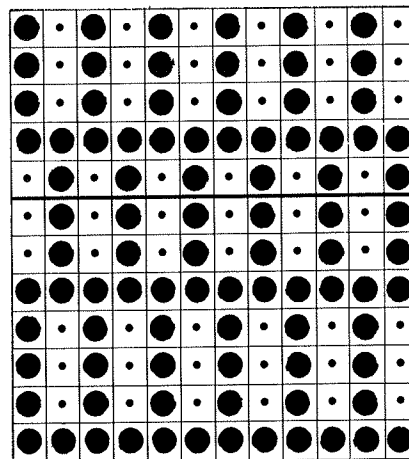
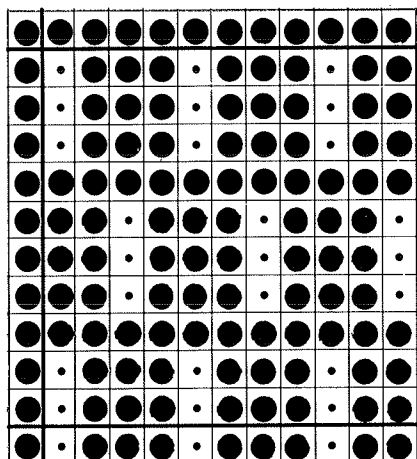
Cast on 41 stitches with 4 ply wool. (20 st. left and 21 st. right of center 0) Knit 10 rows on tension 7. Change to tension 8.

1. Pull every 6th needle into D-position. (watch center!) and *knit 4 rows, front lever on I. Change lever to II and knit back and forth over all needles. Alternate the tuck needle and repeat from *. Repeat pattern for 40-50 rows.
2. Take Card 3. Knit 6 rows straight. Put dial on "tuck" and release card. Knit 40 pattern rows.
3. Take Card 4 and repeat procedure (as with Card 3).
4. Take Card 3 again, knit 6 rows. Leave card blocked all the time. Knit alternated 4 rows on stockinette in main colour and 2 rows on "tuck" in second colour.
5. Card #3 is still blocked in on 1. Knit 4 rows with colour one on stockinette. Set dial to "tuck" and release card. Knit 4 rows with colour 2. Change colour every 4 rows. The colour change has to correspond with the alternation of the punch holes in the card, to make the pattern properly.
6. Repeat #5, only with 3 colours, changing every 4 rows.
7. Experiment yourself for at least two different patterns using same Cards.
8. Design a tuck pattern by pulling the needles by hand. Then punch your own Card accordingly. (see next chapter on "Punch Cards for Tuck", page 189).

PUNCH CARD FOR TUCK PATTERN

1. For continuous fabrics in tuck pattern it is absolutely necessary for good results to punch a whole card, with the proper repeat sideways and the continuation lengthwise.
We knit with the dial on "tuck" and learn that it works reversed from our "pull by hand" technique, where we worked on stockinette. The inside mechanism of the carriage with the dial on tuck knits the D-position needles and tucks the B-position needles. Therefore, the punched holes, where the needles can penetrate to D-position knit stockinette and the solid fields, where the needles are restricted to B-position "tuck". A tuck card looks mainly punched, with the solid fields arranged for the tucks.
2. Plain stockinette rows, which might be designed in between the tuck rows, have to be totally punched, if dial stays continuously on "tuck".
3. Although one can, for designing purposes, alternate between dial on tuck and dial on stockinette, as well as block the punch card for several rows to try out the pattern; but this is not advisable for knitting a whole garment. One gets away with only a few punched rows instead of having to punch a whole card and saves some time, but one has to watch constantly for the repeat. One also has to watch that the tuck pattern has to be blocked into the computer one row ahead, to start the pattern properly. All this can be very confusing, while knitting a garment piece, especially if one has to watch for the shaping also.
4. "Tuck" gives very good results if knitted with heavy yarn on every other needle. One has to punch the card accordingly. Watch that the tuck needles or solid fields correspond with the working needles. Remember that the needle right of Center 0 is also the center needle of our tuck pattern. This same needle has to be a B-position needle in the "every other needle set-up". See page 192/193.

various samples for punch cards

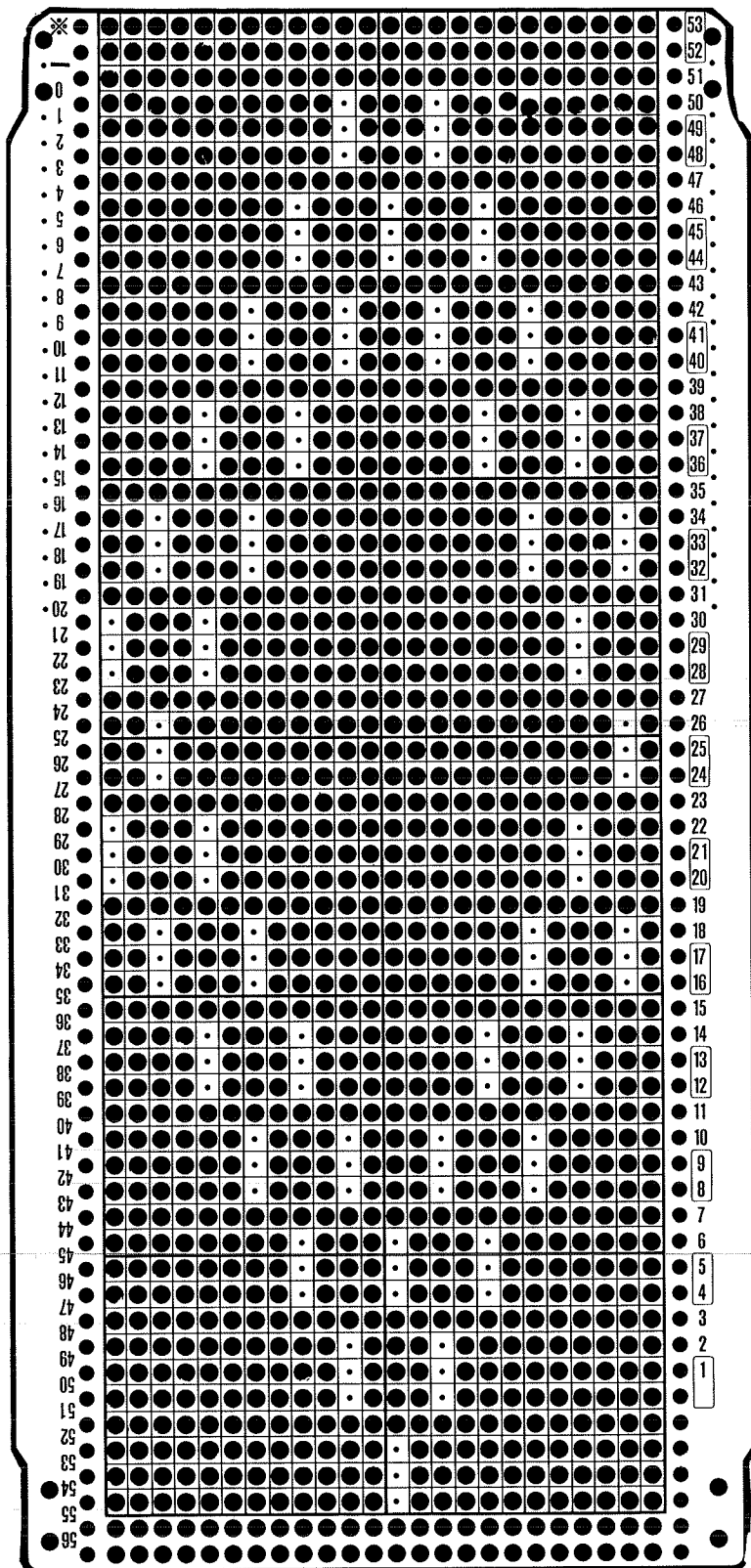


Each of these patterns, punched as a continuous Card and knitted with fine Cotton or Linen yarn on Tension 8 or 9, gives you the "airy look" for summer. The pattern center should be the needle right of "0".

TUCK - PATTERN

For loose and "airy look"

Knitted on every other needle (see page 189, paragraph 4)



Use "double knit"
yarn and tension 7
or 8.

Make sure that the
needle right of
Center "0" mark is
a working needle
(B-position), while
pushing every other
needle into A-posi-
tion for the needle-
arrangement.

See knitted up sample
page 193.

TUCK - PATTERN

knitted on every other needle
for big raised fisherman look

TUCK - PATTERN

with multicolored effect

TUCK - PATTERNwith small structure
or raised effect

THE EYELET TECHNIQUE AND DESIGN

1. The eyelet technique is one method of creating lace patterns. It consists of little holes which are formed on empty needles, pulled back to work or D-position, as we have experienced with our Picot Hem sample, Page 19.
2. In order to have empty needles, we have to transfer stitches from one needle to another needle.
3. We can do our transferring of stitches from right to left, or from left to right, each creating a little different effect. This different effect is used more for small lacy motifs rather than continuous designs, where one mostly transfers all stitches in the same direction.
4. We can also use a different arrangement by transferring 3 stitches to one needle, (the right and left stitch to the center needle) forming a hole each side. This is also used mainly in little motifs.
5. The arrangement of the empty needles together with the way they are transferred, creates the lace effect.
6. In general, one transfers all the stitches for one row, according to the lace pattern, then knits back and forth over it. One transfers again for the next "lace setting" and knits back and forth, and so on. It is a lot of handwork involved, and you can come pretty close to a similar effect with the punch lace method, page 202 . I show the same little pattern to be knitted in Eyelet technique as well as in punch lace, so you can try out for yourself and compare. Page 198.

Eyelet Technique & Design (continued)

I started this paragraph by saying "in general", because there are exceptions. One can create pattern where one transfers for the lace setting every row instead of every other row, to get still different effects.

7. For each hole we need basically a group of 2 needles, which is important for planning and designing a continuous lace pattern. It is also important for establishing the center of our knit. See the Zig-Zag pattern next page, which is a continuous design. You have an even number of stitches between the holes, working with a "group of 2". Also note how necessary it is to match the lace pattern with the center of your knit. We can place the holes one upon the other, forming lattice or squares or cubes, even vertical lines, which look like fagotting or hemstitching. See Page 199 , where you see various designs and vertical lines.

One can alternate the holes to form V-shapes, zig-zags, diamonds or any other diagonal shapes, see graph, Page 197-199.

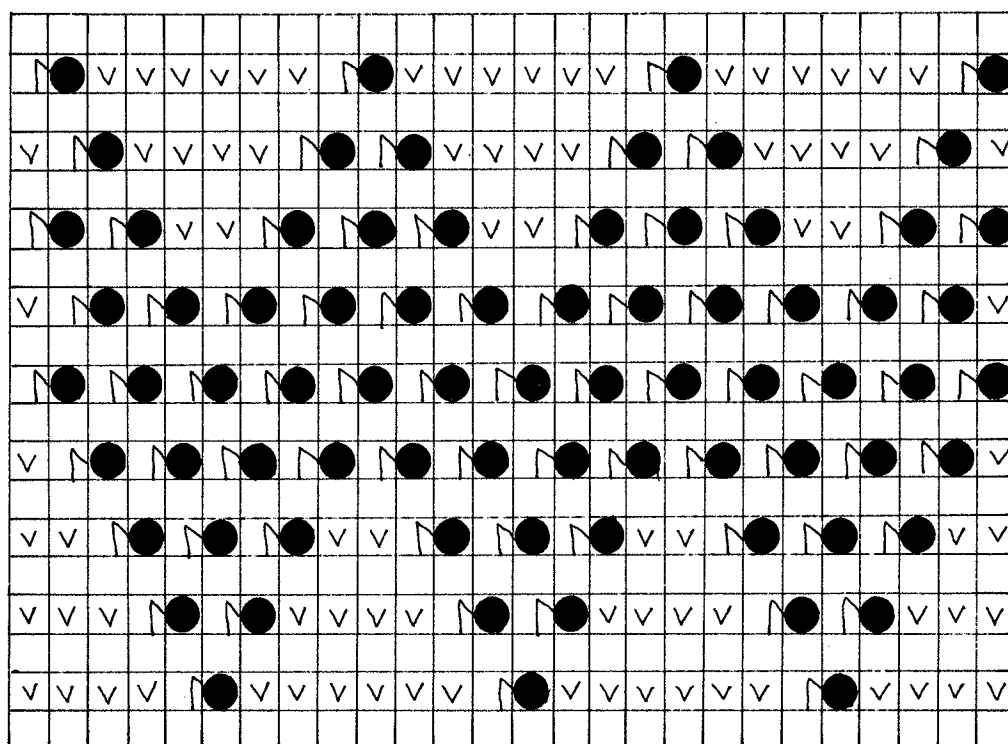
8. For small lacy motifs, or allover designs, we have to plan and figure out very carefully the necessary amount of needles or needle groups (of 2 or 3 stitches) between the lace motifs, especially if we want to alternate them.

See the little motif designs, page 199. Here each motif is worked with a "group of 3". The stitches beside the starting center stitch of each motif are transferred, onto the right and the other to the left, in the first and second lace setting row. In the 3rd lace setting row, the 3 center stitches are transferred to one needle, leaving us with ONE center stitch again. See graph, Page 198.

EYELET GRAPH No. I

for Lace Setting, See Page 195/
#6

You transfer for lace setting, then knit back and forth over it.
Then transfer for the next lace setting and knit back and forth.
Continue doing this according to your carefully worked out graph.



Graph 1: Continuous lace pattern. All stitches are transferred in one direction. We work with an even number of stitches. (Group of 2).

● = empty needle, pulled back to B-position

↖ = stitch transferred to the left

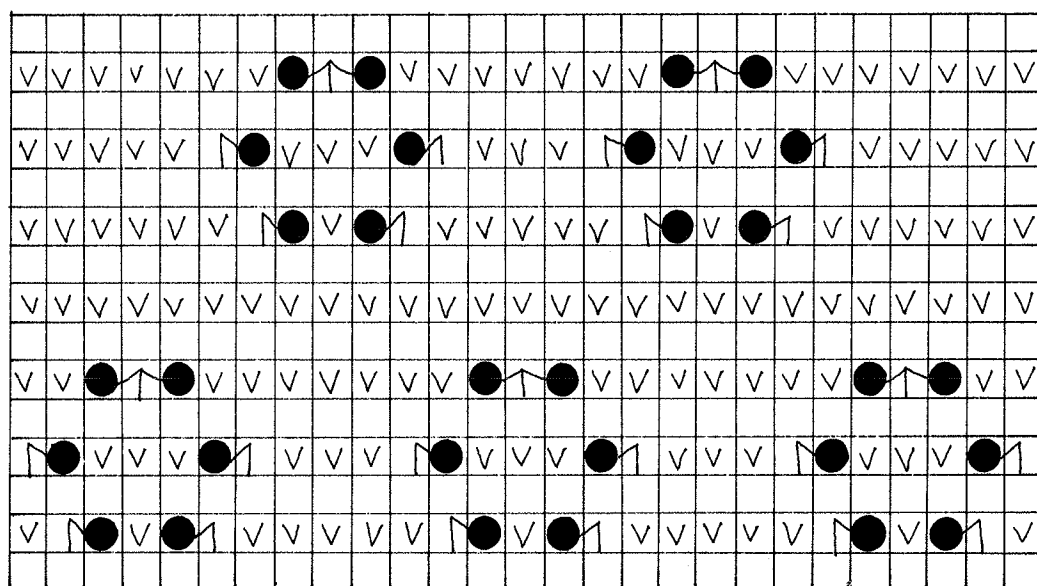
↗ = stitch transferred to the right

↖↗ = 3 stitches knitted to ONE stitch

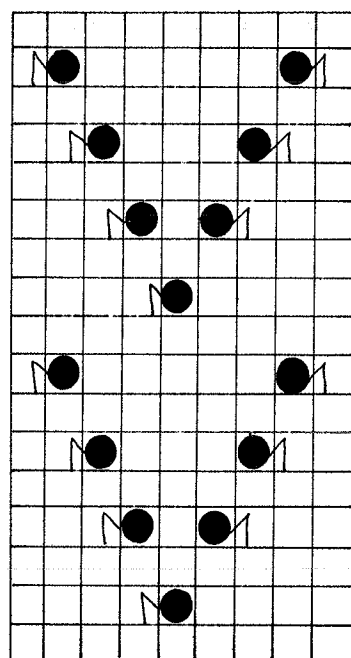
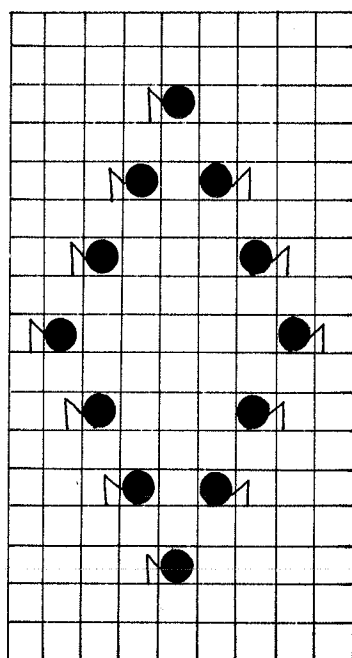
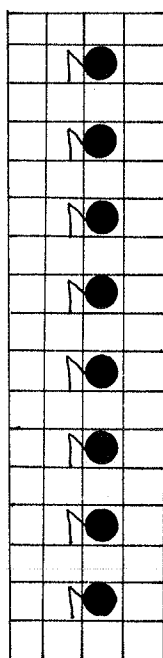
V = ordinary knit stitch

Between the lace settings there are always 2 rows stockinette.

EYELET GRAPH No.II and III



Allover design with little lace motifs. The stitches are transferred in different directions and worked out with an uneven number of stitches between them (group of 3).



Graph Pattern for the motifs of the knitted sample next page.

The center motif is the same as used in Graph 2 as allover design.

EYELET - TECHNIQUE

See graphs #2 and #3, Page 198

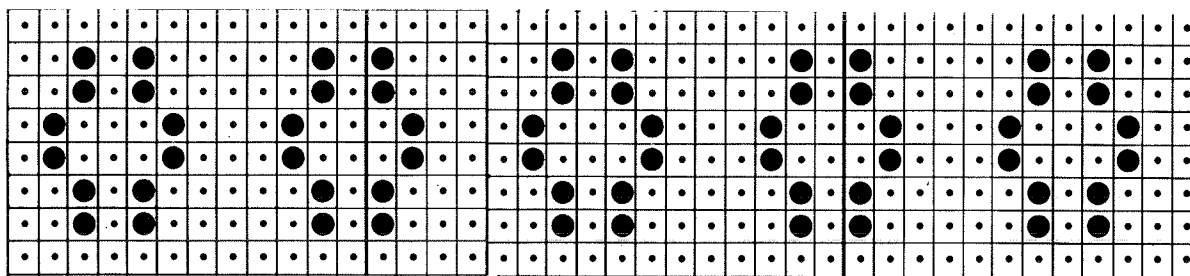
THE PUNCH LACE

1. Punch lace is another way of knitting lace. We work with two different types of yarn.
2. The MAIN YARN is the one we knit the garment with. It can be almost anything from 4 ply to 2 ply wool, cotton, linen or any mixture or synthetic, depending on how delicate we want the fabric.
3. The SECOND YARN should be as fine as possible. We are practically knitting "the holes" with it. Fine nylon thread, which is nearly invisible, gives very nice lace effects, but is sometimes hard to knit, especially on a bigger piece. It is also difficult to steam because the nylon can disintegrate, if touched with a hot iron.
Ordinary sewing thread, which can be bought in large cones, gives very good results, because it is easy to work with and can be washed by hand or by machine without any difficulties. But, since the thread is not invisible, one has to match the colour very carefully (unless one wants a contrast). If the match is not perfect, it is better to choose a shade darker thread rather than lighter. Knitting with sewing thread makes the texture a bit denser than knitting with nylon.
4. We can use some of our commercial cards, which come with the machine, to practise and experiment with punch lace. The best cards for this are: Card #2, #17, #7, #20. Later on in the next chapter, Page 202, I will explain how to DESIGN for punch lace, but first we deal with the technique.

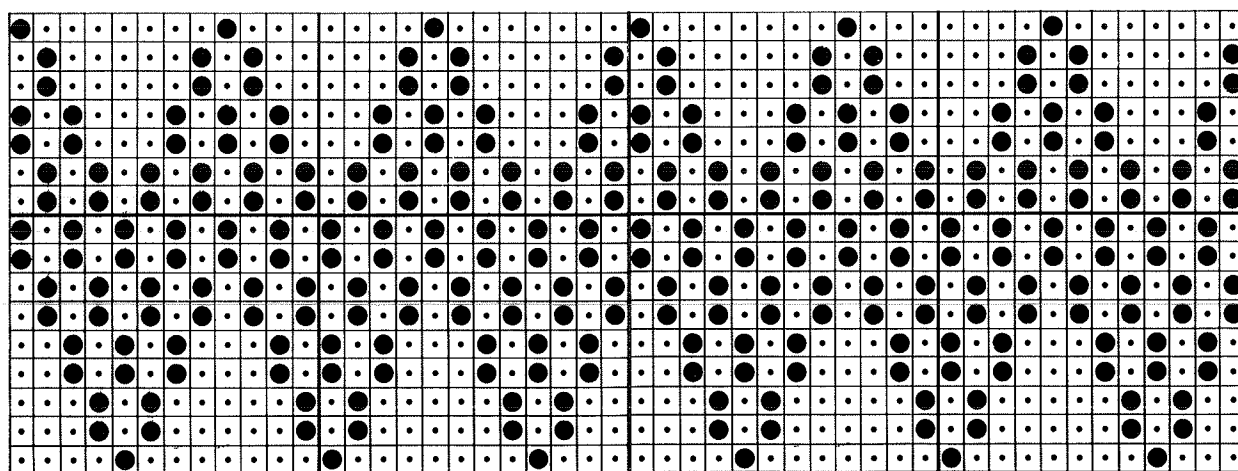
5. While we are knitting the lace, our cam dial is on "Punch lace". Our main yarn is in feeder one, and the fine thread is in feeder two.
6. We wind the nylon or other fine thread twice around the tension nut and put the auto tension dial to 5 or 7 (the tightest), depending on the different models of our machine.
7. We block the card in as usual.
8. Before starting the lace, we knit a few rows on stockinette, with the main yarn and the fine thread BOTH TOGETHER IN FEEDER ONE, to secure the thread. This also puts the punch card in the computer memory.
9. To start the lace, we take the fine thread out of feeder 1 and put it in feeder 2. Card lever on "GO", carriage dial now on punch lace. Do not move the carriage too fast. It "does not pay". Repair work is nearly impossible. Check your end needles all the time, because if they are pulled out of their position or a stitch is slipped, you are in for trouble. It is better to knit with caution. Sometimes it is a good policy to pull the end needle to D-position to secure the last stitch, (front levers have to be on II). But I found this a very individual approach.
10. You have to use a wire and weights for knitting punch lace. I found it most workable to use a fine strong wire, as for instance, piano wire, the full length of the needle bed. Weave it through the knit and attach the weights to the wire. That balances the weights properly and does not pull on a few spots only.
In case we do not have enough extra weights, we take ordinary stones of similar weight, put into a little cotton bag and attach to a wire hook.
11. Exercise: Cast on 40 st. and try out several Cards to get a feel for the technique and an experience of what type of design will give the best results.

PUNCH LACE DESIGNING

1. If we have the dial on punch lace, the unpunched fields of the punch card are knitted with BOTH YARNS TOGETHER. The punched holes are knitted with the thread in feeder 2 only. This gives us the lace effect.
2. We can create a lace fabric with lacy motifs, repeating according to our punch card, a continuous border or an allover pattern. Again, as before, we have to watch our side and length connection (see page 48 and page 50)
3. To design for punch lace, one gets the best results by repeating each lace stitch over 2 rows in length. That appears in your knit as ONE hole.

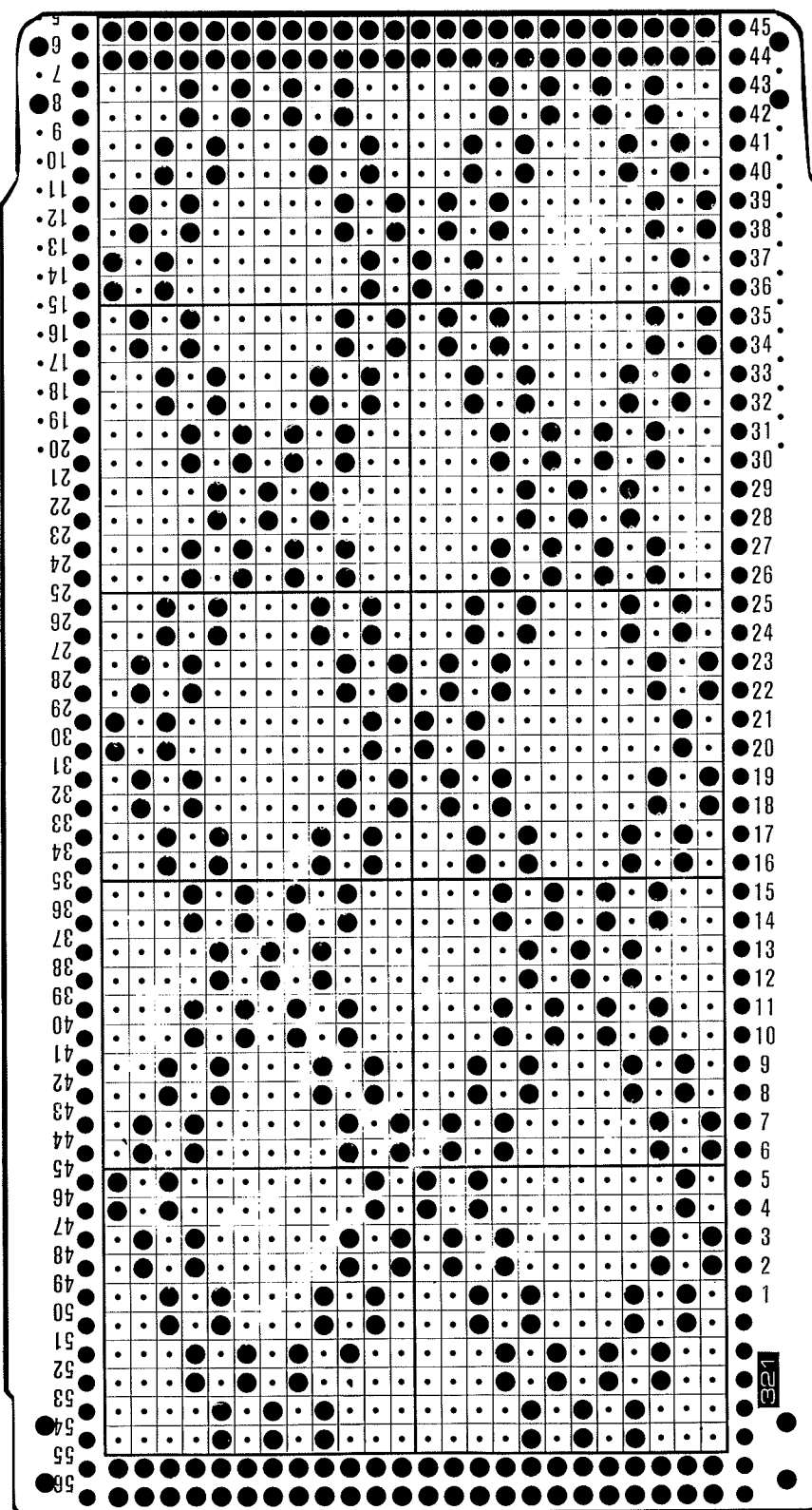


You recognize the little allover lace motif we worked out with the Eyelet technique, page 198. Now, you can try the same pattern in punch lace and compare (1) the time involved and (2) the result.



And here is the Zig-Zag lace insertion, which we also did in eyelet, page 197. Now it is transposed to punch lace.

Punch Lace Designing (continued)



Geometrical Patterns in a diagonal arrangement are easy to design and give very effective results for an allover lace. But remember, always go in vertical direction 2 holes above each other if you want a clear pattern.

If one wants to create a very diffused lace fabric, nothing matters. One can try anything!

Punch Lace Designing (continued)

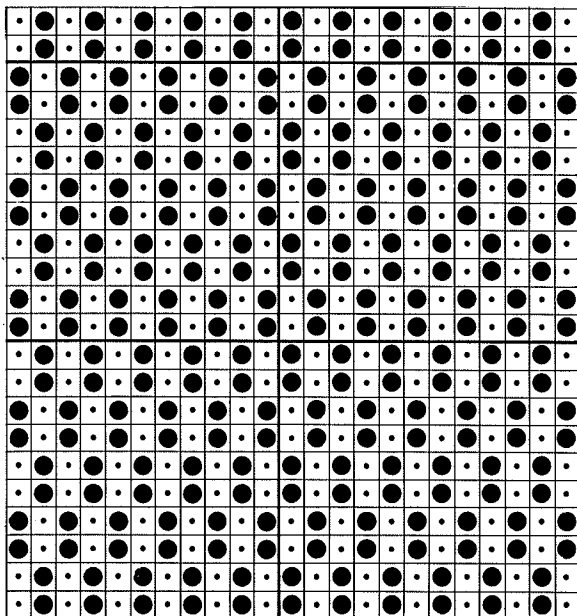
We can also create lace fabric where a motif in plain knit is designed into a lace background. Those patterns are more difficult to design, although very interesting.

One has to start with the background. From my experience, our cards #7 and #2 give the best neutral background pattern. Card #1 is difficult to use as a base. The alternation occurs every row and that does not form a clear pattern, but "creeps" together.

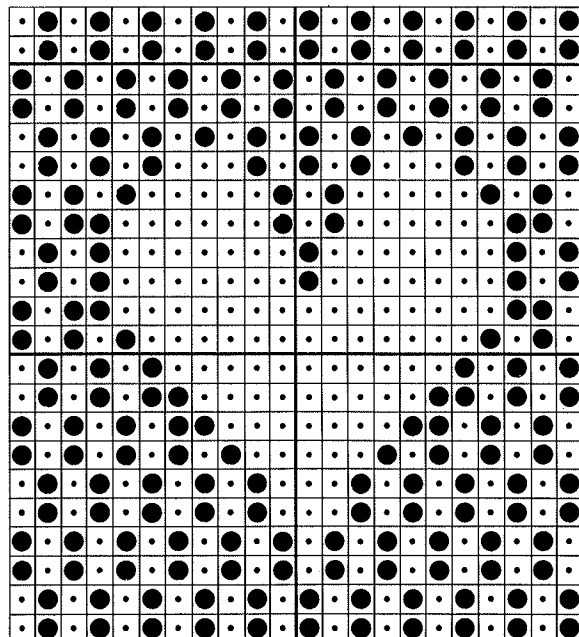
You can see next page, how the "heart" and the "flower" design are fitted into their backgrounds. The fields bordering the side outline of the pattern should be punched holes. Those are vertical rows, giving the shape. But straight horizontal rows of holes, bordering the pattern at the top or at the bottom, should be avoided. The places where the lace is knitted with the fine yarn do show the heavier yarn or wool floats from underneath. In the short distance of 1 - 3 stitches the floats underneath appear as part of the background pattern, but if they go under more than 3 stitches, it can look very untidy. Again, it depends if you want a clear pattern or a diffused one.

The leaf pattern I show you on page 206, is an allover design, where the leaves, in plain knit, are fitted into a "one-by-one" background. You can see how I have avoided horizontal "hole-lines" over several stitches, but used a lot of diagonal outlines which show up in the lace pattern very well. The pattern itself is symmetrical. I give you the card on page 207. Naturally, one can create completely free floating irregular shapes, which form an allover lace. One can also design over two or over 3 lengths of cards, until the repeat occurs, so that the pattern does not become monotonous. Our side repeat though has to stay within 24 needles or fields.

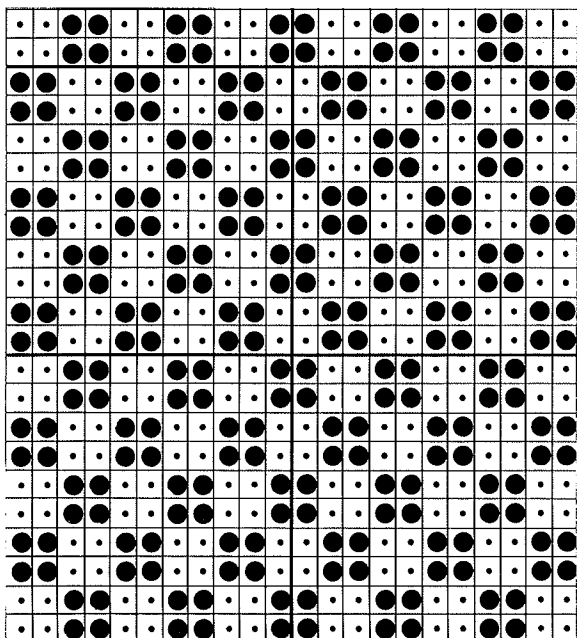
Punch Lace Designing (continued)



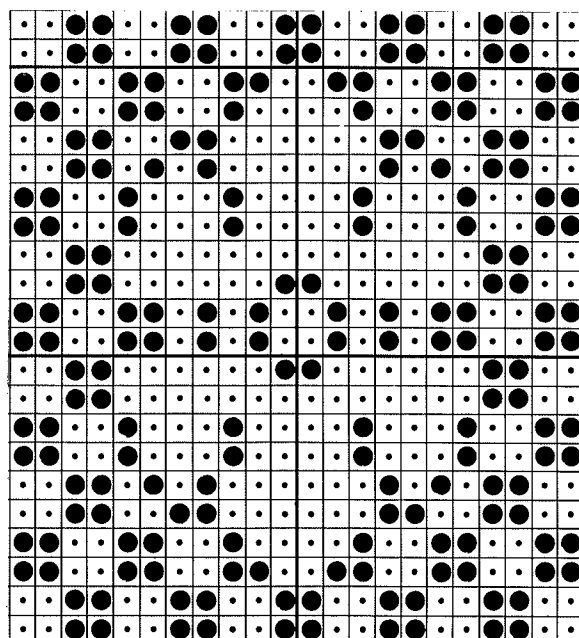
Card #7 basic background



A "heart shape" worked into the lace background



Card #2 basic background



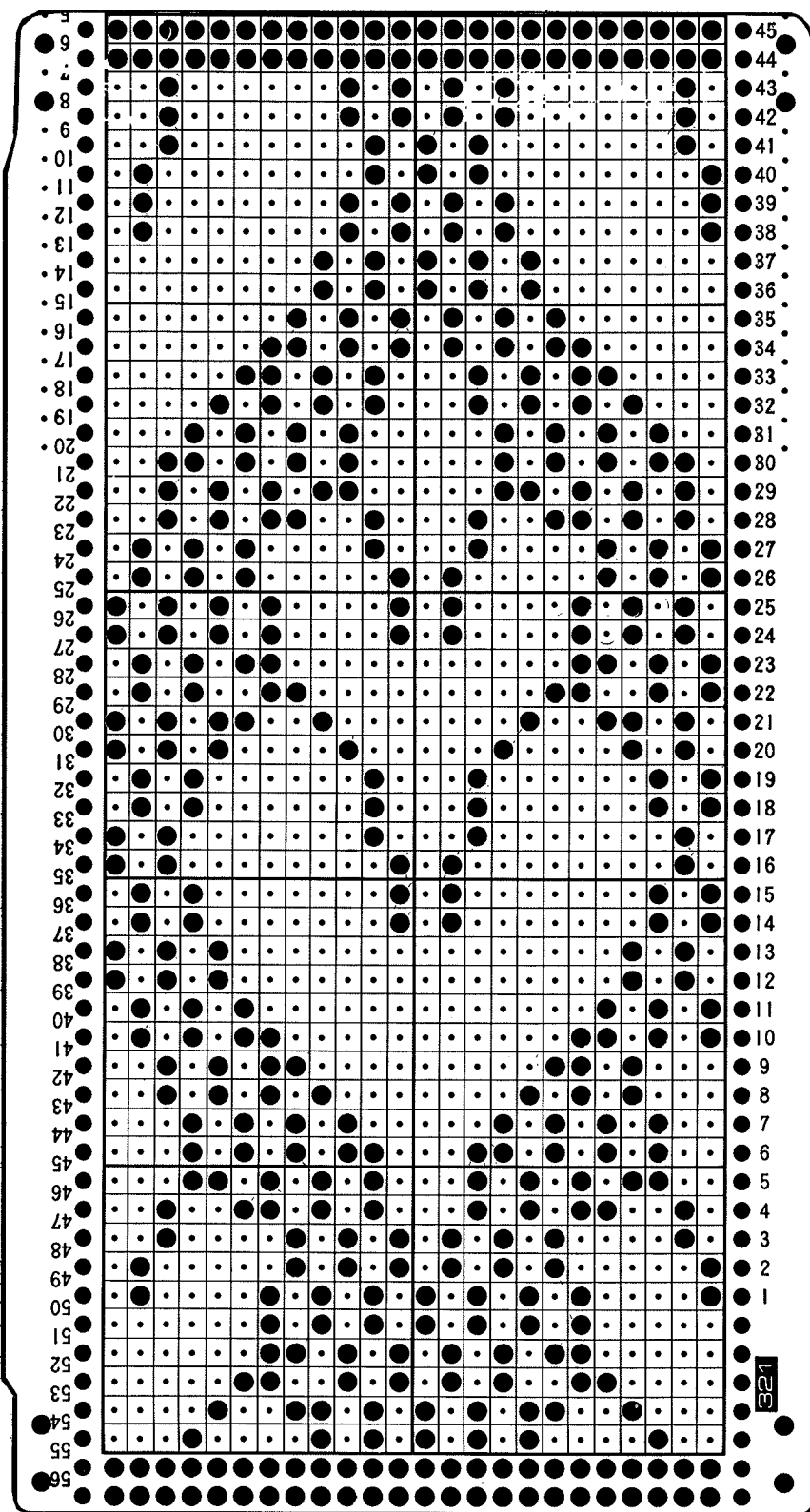
A "flower shape" worked into the lace background

P U N C H · L A C E

Allover Pattern

See card on Page 207

Punch Lace Designing (continued)



This is the Punch Card for the all-over Lace pattern we knitted up on Page 206.

Just for a different effect, one can use the Punch lace setting but instead of wool and fine thread one can use the same ply yarn in feeder 1 as in feeder 2, but in 2 contrasting colours.

Try it out!

notes

THE TUCK LACE

One can also create lace with tuck pattern, which still gives a very different structured fabric.

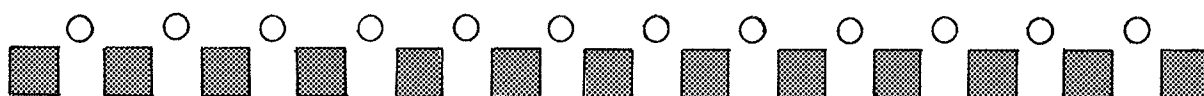
1. Tuck lace is a tuck pattern with a very loose tension. The "floats" between the stitches are part of the lace design.
2. We achieve the very loose tension by leaving one, or a group of several needles in A-position. The floats (or the distance) between the working needles, created by the needles in A-position, together with the "tucking" form most interesting lace patterns. (Exercise #1)
3. The patterns are designed through the distribution of tucks and knit-stitches, also through the floats and how they are spaced and placed. The amount of stockinette rows between the tuck rows also forms part of the pattern. (Exercise #2).
4. If we pull the pattern by hand, we have to watch our front levers very closely. While tucking (the tuck needles are in D-position) the levers have to be on I. If we want to knit the tuck needles back in, the levers have to be on II. Put them right back to I before starting the next tuck row.
5. The sequence of needles in B-position (working needles) and needles in A-position (non-working needles) is called the "lace-setting". This lace setting is additional to the punch card for tuck, because it determines only the floats, NOT the tucks.
6. As with all tuck patterns, one should start with a few rows on stockinette. The stitches designated to the A-position needles for the lace setting then have to be transferred to a neighbouring needle, to secure them. It depends on the pattern if they are transferred to the right or left side of the tuck stitch. In general, one takes the tuckneedle as a center and transfers everything at the right side to the right neighbouring needle and everything at the left side to the left neighbouring needle. If you have only ONE stitch each

Tuck Lace (continued)

side to transfer that is no problem. If you have 2 or 3 stitches to transfer, you can either take them all together in one operation, or transfer them singly and knit back and forth between each transfer row. (For 3 stitches it takes 3 operations, or 6 rows). The effect is quite different and the choice is part of the "creation". You have to try out which way fits better into the concept of your design.

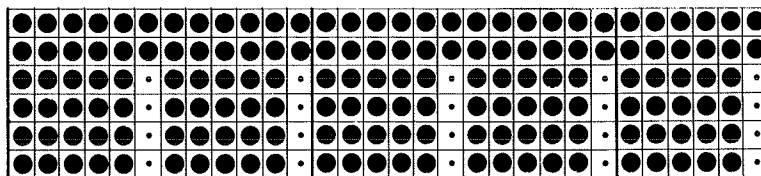
It is possible, for special reasons, to cast on already according to lace setting, but one has to knit the first few rows very carefully, and it does not make a perfect edge, but sometimes one does not want a closed border. As for all tuck patterns, one also has to knit with weights, and it is advisable to knit with the yarn separators to prevent the first stitch of each row from slipping off.

7. Again, it is most important to watch the Center 0 mark. Corresponding to our punch card, the needle right of 0 has to be a working needle, no matter if it is knitted or tucked.
8. Our symbol for a needle in working or B-position is  The symbol for a needle in A-position is  "Lace setting" for every other needle looks like this:



9. One can have many different lace settings for the same punch card which form different patterns. For instance, our card (see sample below) is punched so that every 6th needle tucks over 4 rows, with 2 rows stockinette between.

Our exercise #3 on Page 212 shows 4 different lace settings to be



used for this card. Try them and see the difference.

Tuck Lace (continued)

BASIC SAMPLE TO SEE HOW THE "FLOATS" ARE FORMED.

Exercise #1:

Cast on 41 stitches (tension 7 or 8). Knit 4 rows. Pull every 8th needle to D-position, starting at the center. Tuck over 4 rows (lever on I). Knit 4 rows plain stockinette - lever on II- and pull the same needles out again. Repeat 4 times.

Transfer one stitch each side of the tuck needles, to their outside neighbouring needles. Knit 4 rows. Pull the same tuck needles out again and tuck over 4 rows. Knit 4 rows. Repeat 4 times.

Again transfer one stitch each side of the tuck needles to their outside neighbouring needles. (We have 2 empty needles now besides each tuck needle). Knit 4 rows. Pull the same tuck needles out again and tuck over 6 rows. Knit 4 rows. Repeat 4 times.

Pull the 2 outside needles of each tuck pattern from A to B-position, leaving one needle each side of the tuck stitch still in A-position. Knit back and forth. Pull the 2 needles beside the tuck stitch also back to B-position. Knit back and forth.

Remember: the machine forms a new stitch only over ONE empty needle at a time, not over 2 or 3 neighbouring needles.

We have all needles back in working position. Each needle, pulled back into work from A-position closes a float and leaves a little hole. It is part of the designing to make use of this fact. See the lace border and exercise, Page 220.

Tuck Lace (continued)

Exercise #2: To create new tucks in the pattern:

Cast on 41 stitches. Knit 8 rows. Pull the needle right of Center 0 and the 12th needle on each side of 0 to D-position (lever on I). Tuck over 4 rows. Knit them back in (lever on II), back and forth. Repeat tuck one more time. Knit 4 rows.

Transfer the 2 stitches beside each tuck needle to their outside neighbouring needles. Knit back and forth. Pull the same 3 tuck needles as before to D-position. Tuck over 4 rows. Knit over 4 rows. Repeat 2 more times.

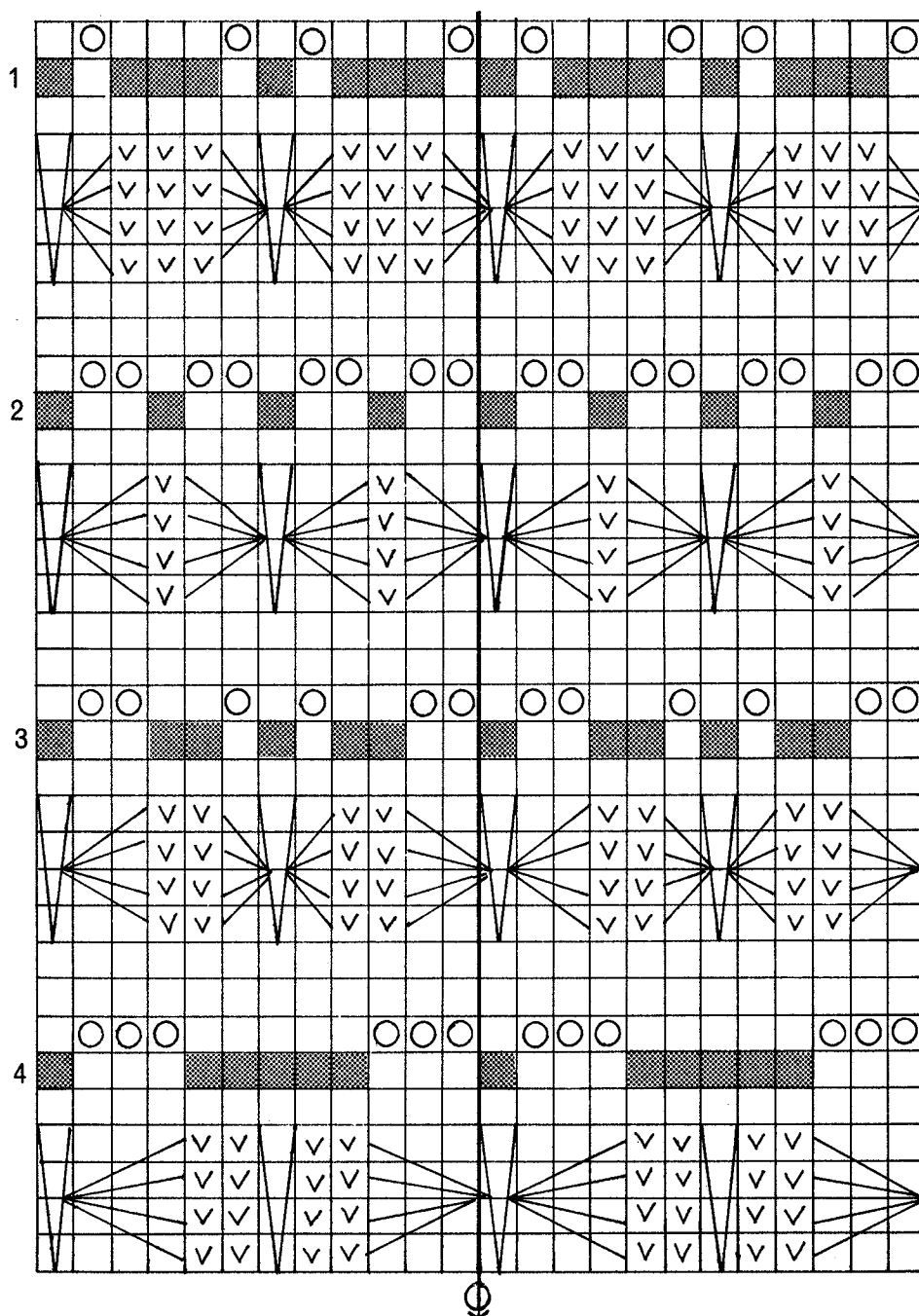
We have 3 tuck groups and 9 stitches between them. Transfer the 2 stitches beside the center stitch of each "group of 9" to their outside neighbouring needles, creating 2 new tuck-groups between. Pull the 3 tuck needles of the first group to D-position. Tuck over 4 rows. Knit 2 rows. Pull the 2 new tuck needles to D-position. Tuck over 4 rows. Knit 2 rows. Keep on alternating and repeat 3 or 4 more times. Knit 4 rows.

We have 5 tuck groups and 3 st. between them. Again transfer the 2 st. beside each tuck needle to their outside neighbouring needle (we have 3 st. on each needle) and knit the same pattern, alternating the tuck as before, but tuck each time over 6 rows instead of 4.

Pull 2 needles beside the tuck from A to B-position. Knit back and forth. Pull remaining needles back to B-position. Knit 4 - 6 rows. Cast off.

Tuck Lace (continued)

Exercise #3: Different lace settings for the same card - every 6th stitch tucks. Knit 4 samples and repeat each lace setting 6 times.



Punch the card so that every 6th needle tucks over 4 rows. Alternate with 2 rows stockinette, see Page 209, Paragraph 9.

- Needle in B-Position
 ○ Needle in A-Position
 V Regular Knit-stitch
- Lace Setting

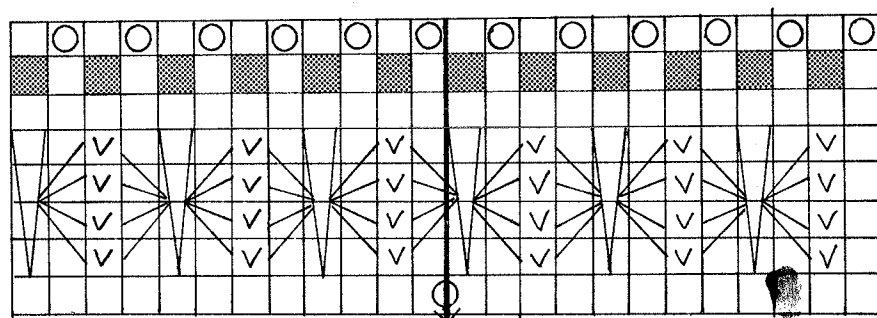
Tuck Lace (continued)

Exercise #4: Consisting of 4 samples - to alter the pattern through bigger floats. (Sample A-B-C and D).

There are 4 samples, all knitted with the same basic pattern only each transposed to a bigger scale. We have "one knit", "one tuck" alternated on the working needles, tucked over 4 - 8 rows, with 2 rows of stockinette between each tuck-pattern. We always tuck the same needle (not staggered). Watch the front levers.

Sample A

Pull 43 needles out and push every other needle back to A-position. The needle right of center 0 should be a working needle. We end up on both sides with 2 stitches on every needle for a better edge. This is our cast on and at the same time our "lace setting". We knit sample A on Tension 4. We tuck over 4 rows, knit 2 rows and repeat. Start with 2 rows stockinette (lever on II).



Lace-setting for
A and B

"Tuck" occurs
every 4th needle

Sample B

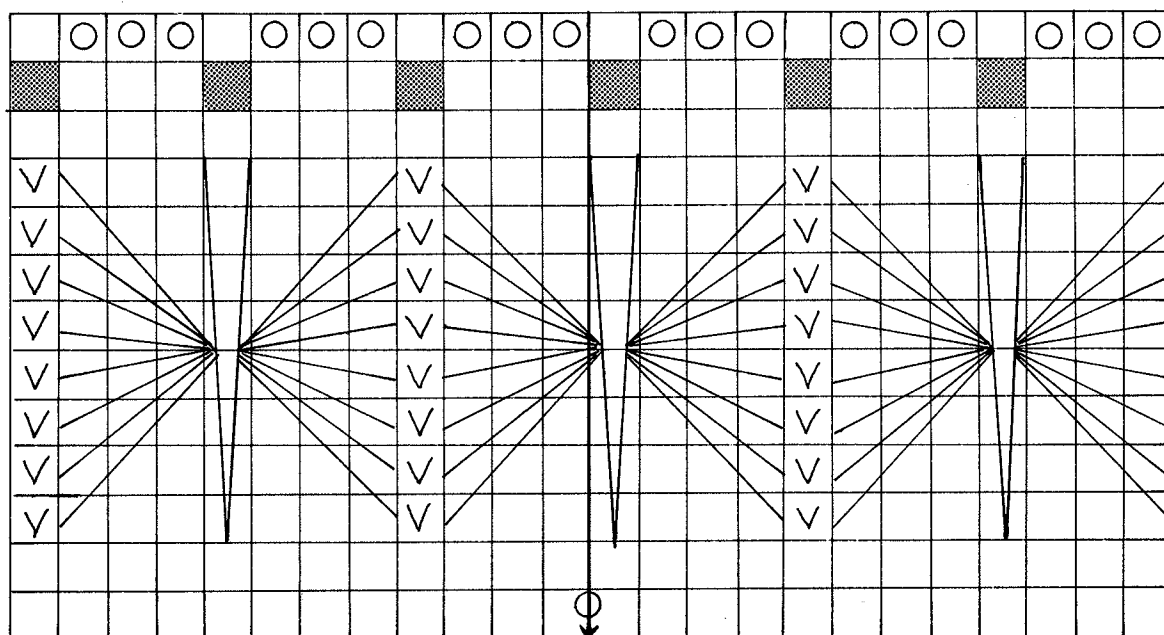
Pull out 43 needles and push every other needle back to A-position. Knit exactly as Sample A, only on tension 9 or 10. On some machines one can easily go to tension 10 with a tuck pattern. Some others do not work properly if they have to tuck on such a loose tension. You have to try for yourself.

Tuck Lace/Exercise #4 (continued)

Sample C

Again we work with 43 stitches, but pull every 4th needle to D-position. The center needle should be a working needle. We end up on both sides with 2 st. on every needle, for a better edge. This is our cast on as well as our lace-setting. Start with 2 rows stockinette, (lever on II).

Pull center needle and the 8th needle to each side out to D-position (we have 5 tuck needles). Tuck over 8 rows, if you can manage. If it does not work, tuck over 6 rows. Knit 2 rows, repeat. Knit on tension 6 or 7. It gets much looser through the 3 needles in A-position, creating a bigger float to make the pattern more open. Check if all floats have been knitted in, after your first stockinette row. Repair if necessary. This is the only row where one can do some repair work.



Lace setting for Sample C.

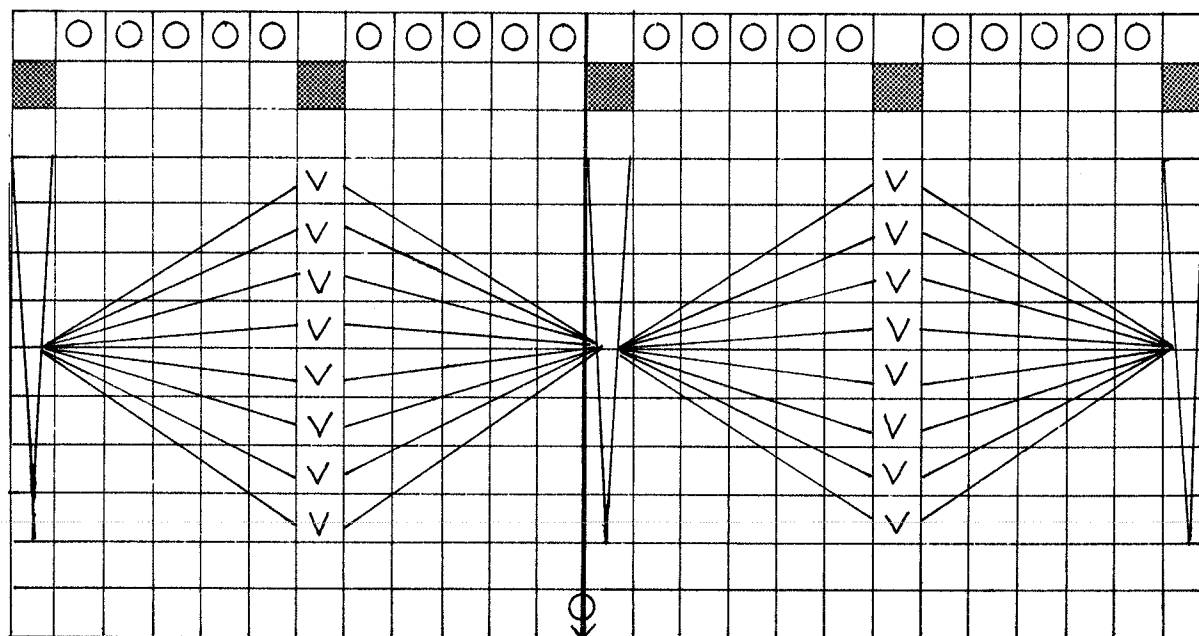
The tuck occurs every 8th needle.

Tuck Lace/Exercise #4 (continued)

Sample D

Again we work with 43 needles but pull every 6th needle to D-position, starting with the center needle and ending on both sides with 4 stitches on every needle to secure edge. This is our cast-on as well as our lace-setting. Start with 2 rows stockinette (lever on II). Pull center needle and the 12th needle from center on both sides out to D-position. Those 3 needles are our tuck needles. We have 5 empty needles; it should be no problem. We knit with tension 5 or 6. One has to try one's own machine, because every machine has a slightly different tension. The person who knits, also has an influence on the tension.

Check if all floats have been knitted in, after the first stockinette row. It is easy to do some repair work then, if necessary, while it is not possible later on.

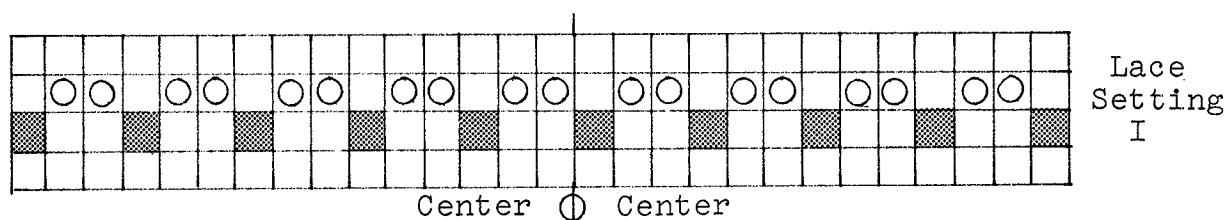


Lace-setting for Sample D. Every 12th needle tucks.

Tuck Lace (continued)

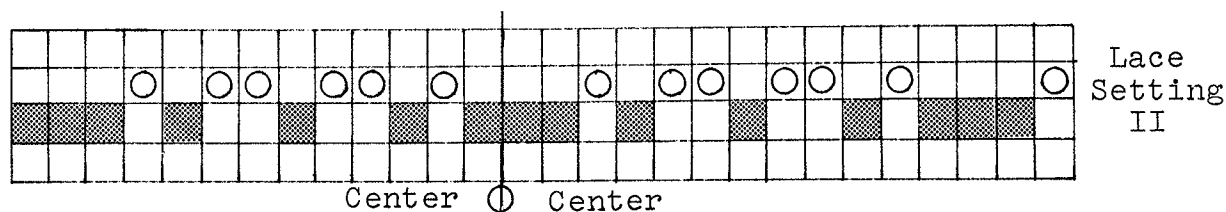
Exercise #5: Fancy pattern for advanced students.

We work with 61 needles. The needle right of center 0 is a working needle. From there we leave 2 needles in A-position and pull every 3rd needle to D-position, ending each side with 4 needles in D-position for a secure edge. This is our cast on as well as our lace setting (I).



Knit 4 rows on stockinette, tension 8 (lever II). Pull the center needle and every 12th needle each side to D-position. Those 5 needles are our tuck needles for the first tuck pattern. Tuck over 8 rows, knit 4 rows stockinette. Pull the 6th needle each side of our center tuck out to D-position, and from there the 12th needle each side. This will alternate the tuck. (We have 4 tuck needles). Keep on alternating the pattern for a few times. This is already a familiar pattern. Now we are experimenting with something new.

After you have finished the 8 tuck rows, knit 2 rows on stockinette, then pull the 2 needles each side of the tuck needles back to B-position and knit another 2 rows stockinette. We have created two holes on top of the tuck and have now a group of 3 working needles there. (Lace Setting II).

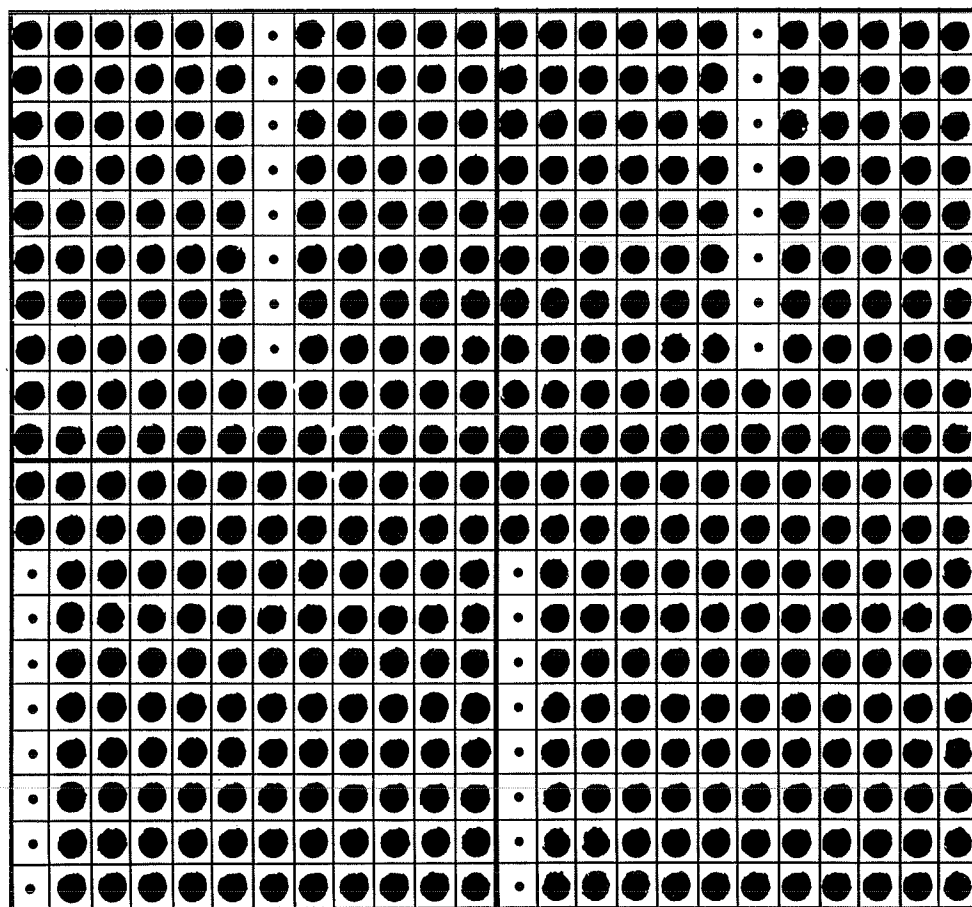


We pull out the alternated tuck needles as before, tuck over 8 rows and knit 2 rows stockinette.

Now we put the "group of 3" back to ONE needle again and at the same time pull the 2 needles each side of the tuck which we have just finished, to B-position, creating there 2 holes and a new "group of 3".

Knit 2 rows stockinette and pull out the alternated tuck needles. Repeat.

The looser the tension, the loftier the lace gets, but it depends on the yarn, on your machine, and last but not least, on yourself, if you can manage it on tension 10.



If you want to punch a card for this pattern, here it is. 8 rows of tuck, 4 rows plain and alternate.

TUCK - LACE

Allover-pattern in
2 different versions
See Page 216 and 217

TUCK LACE BORDER

This exercise will be pulled by hand or can be knitted with Card #3, blocked in to match center. Center stitch has to correspond with needle in working position.

Cast on 53 stitches. Knit stockinette on tension 6 or 7, to suit yarn. Knit 20 rows.

Transfer every other stitch. Needle right of center 0 has to be a working needle. Pull all empty needles back to B-position.

Knit back and forth. Transfer again the same stitches but this time push all empty needles to A-position. Change tension to 10. Knit 2 rows.

Pull out every other needle to D-position. (Counting only the working needles). Needle right of 0 stays in working position (center needle). Knit 4 rows, front levers on I. Knit 2 rows, front levers on II. If card is used, the 4 rows are on "tuck". Put tension back to 6 or 7. Pull both needles beside center needle into working position. Leave 4 needles in A-position and pull next 2 needles back to work. Continue the whole row.

Knit back and forth.

Pull the 2 outer needles of each A-position group back into work.

Knit 2 rows.

Pull last 2 needles of each group back to work.

Knit 20 rows and repeat lace border once more.

See how it looks knitted up on next page.

TUCK - LACE

Border combined with
Eyelet - technique
(see Page 219)

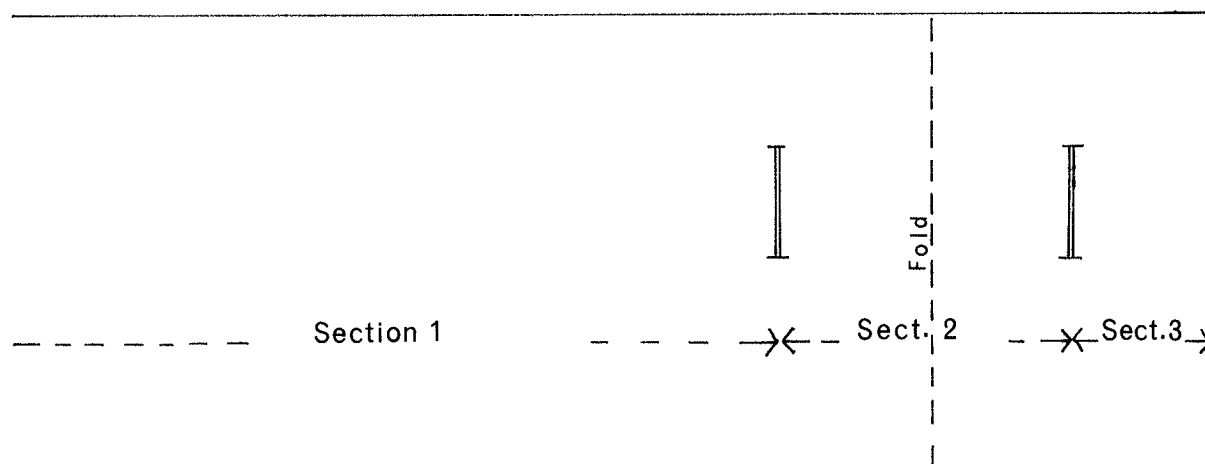
notes

BUTTONHOLES - DIFFERENT METHODS

We have many different ways of making buttonholes - here are the most used ones.

1. The simplest form of buttonholes are small round holes over 2 stitches. One transfers at the proper place one stitch to the right and one stitch to the left, leaving 2 needles empty. One needle stays in B-position and immediately forms a new stitch, while knitting to the left. The second one, is then pulled also into "working" and forms the missing stitch while knitting back to right again, practically one row later. These buttonholes are especially suited for baby or children's clothes, when one uses small buttons and does not need double facings, but simply a crochet edge.
2. The buttonholes I find best are horizontal buttonholes in a double facing, done completely on the machine. I give you the exercise for it on the next page.
3. One can also make a horizontal buttonhole with open stitches, which are woven or grafted together and, if necessary, reinforced with a buttonhole stitch. They are planned exactly as #2, steamed, to keep the stitches from running, then the contrast yarn is pulled out and the open loops are ready to be grafted or woven together.
4. We can also make vertical buttonholes which are done like the "slit", page 76. If one needs a set of 2 buttonholes for a double facing, one has to work in 3 sections over the same amount of rows, where one wants to place the buttonholes.

Buttonholes (continued)



Section 1 is the main part of our garment till the first buttonhole. Section 2 is the distance between both buttonholes and section 3 is the little space between the 2nd buttonhole and the facing edge, see sketch. How many rows one has to knit depends on the size of the buttons. The buttonholes are also reinforced with a blanket or buttonhole stitch, though the stitches cannot run.

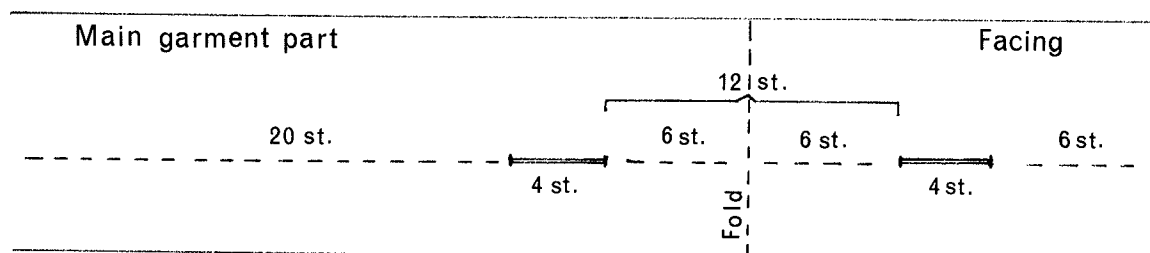
There is also a way to cut buttonholes into the finished garment later on. Mark the designated spots, clip one stitch at the center of the buttonhole and carefully peel the loops out to both sides, for the proper size. The stitch loops lay open on both sides.

Treat the buttonhole as #3, working the loose ends into the reinforcement.

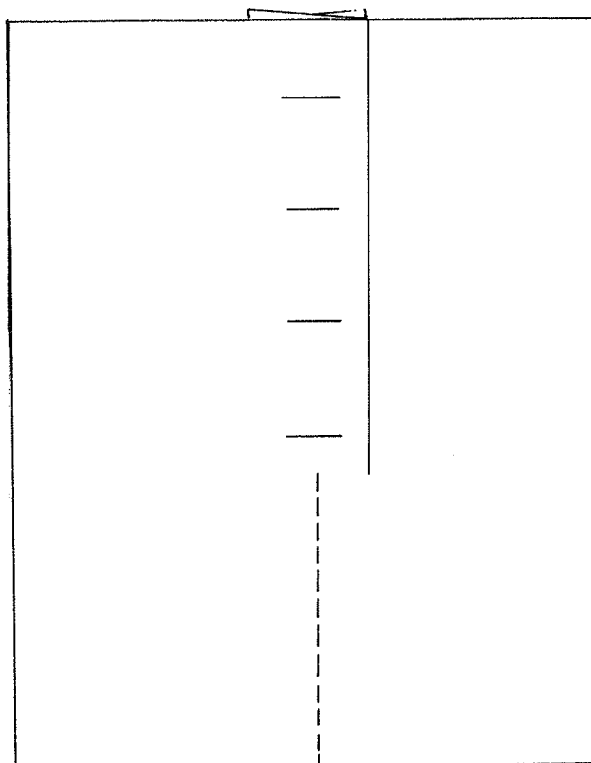
BUTTONHOLE EXERCISE

For Buttonholes done completely on the machine.

Cast on 46 stitches. Knit 20 rows. Plan first buttonhole 6 st. from facing edge. Leave carriage at right and knit 4 st. for the buttonhole by pulling contrast yarn through the loops by hand. Leave 12 st. and knit for the 2nd buttonhole 4 st. by hand in with contrast yarn. Knit 30 rows over it. Plan second buttonhole set the same way and repeat 2 more times. End sample with 20 rows straight and cast off. Steam sample, to set the stitches.



The buttonholes are now ready to be put back on machine. First, fold sample horizontally in buttonhole row, then fold vertically facing fold line. Now, put the buttonhole stitches, separated by the contrast yarn, back to the machine. Start with the outside row, closest to the machine, then take the other outside row, closest to you. Put the stitch loops behind the latch. Cast off both stitch-rows together, with extra yarn. Break yarn. This closes one side of the buttonhole. Now turn the knit so that you can see the other loops, separated by the contrast yarn. Put them on to the machine the same way and cast them off together also. This closes the second side of the buttonhole. (NOTE: we have 4 buttonhole stitch loops on one side, and 5 stitch loops on the other side). Tie both cast off threads together with a knot. Do not cut thread too short. Pull out contrast yarn, turn and steam.



BUTTONHOLE PLACKET

Sample: Cast on 40 st. Knit ca. 26 rows. Mark center with contrast yarn. Put 16 st. on left side on contrast yarn and slip down, (leaves you 4 more st. on left side of 0.) Knit from right to left. Pull 9 more needles for facing of overlap out into C-position. Wind

yarn around and knit 11 more rows over all 33 st. Now plan first set of buttonholes, counting from left to right: 3 st. border, 3 st. buttonhole, 6 st. facing fold, and 3 st. buttonhole. Knit buttonhole stitches alone by hand with one row of contrast yarn, then knit 16 rows over all 33 st. Repeat buttonholes twice more. End with 10 rows over all st. Cast off.

Now, knit left side. First put all 16 st. from contrast yarn back to machine. Then pull out 17 more needles to C-position (4 st. to replace the 4 which went over the center on right side, 4 st. to balance the underlap and 9 st. for the "foldback" of underlap facing). Wind yarn around needles in C-position behind open latches. Knit 54 rows over all 33 needles, cast off.

Baste, fold, steam and work buttonholes.

KNIT A CASING - FULLY ELASTIC

Exercise: Cast on 40 st.

Knit 30 rows.

Take off on contrast yarn.

Put back to machine, leaving contrast yarn in.

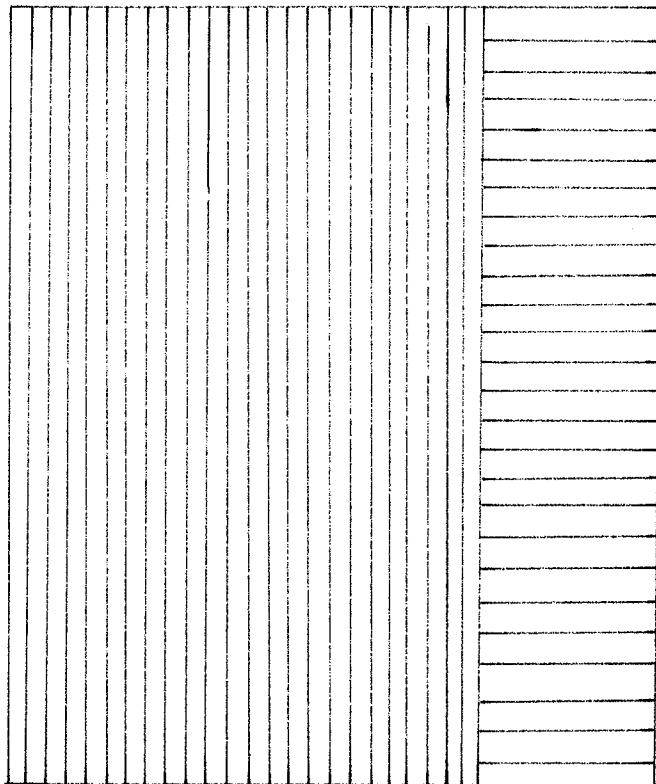
Knit 12 rows, take off on contrast yarn. Put knit back to machine where the first contrast yarn still shows. This will be the bottom of your casing. The already finished front piece of your casing hangs down behind the new stitch line. Knit 12 rows, take off on contrast yarn. Now, you have 2 pieces with 12 rows originating at the same row at base. Put the piece "below" first back to machine and unravel the contrast yarn. Put the "above" piece back to machine to same needles and unravel the contrast yarn. Knit 20 rows and cast off. Take the last contrast yarn out (at the bottom of the casing) and steam.

This gives you a casing for 1" wide elastic.

If the casing is used for a garment, leave 3-4 stitches each side "without casing" for seam allowance. In other words, knit only the front piece over all stitches and the facing piece less 3-4 st. from each side.

notes

ADDED FACINGS

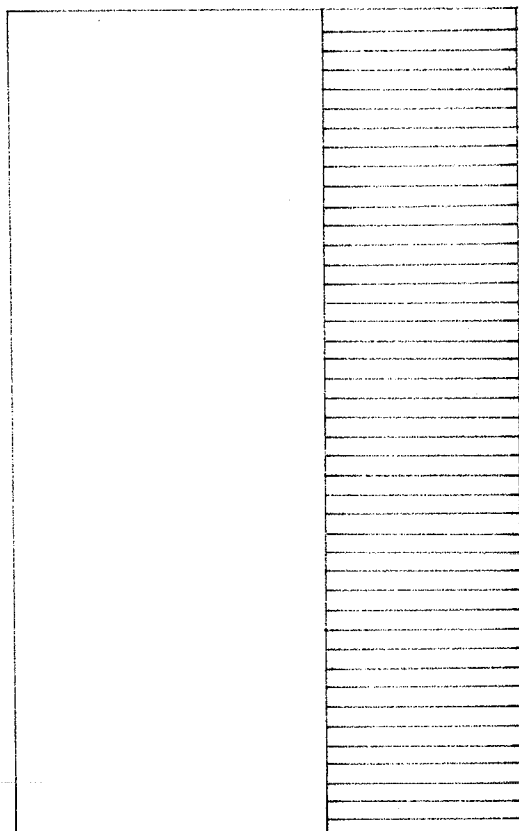


Double Facing knitted on every needle, to finish up a sweater front.

Exercise #1: Cast on 30 st. Knit 60 rows on tension 7. Cast off.

Turn knitted piece sideways and put those 60 rows on to about 42 needles. Purl side is up. Bend side edge (the edge which is to be put on) towards you, so that the end stitches, at the bend, are showing as a perfect row of loops. Go into each stitch loop till it gets tight, then skip a stitch and continue putting them on. (you skip approximately one stitch every 4th needle). Knit band as wide as wanted (double width). Cast off, steam and slipstitch facing in place.

Added Facings (continued)



Double Facing
in Mock Rib to finish
up a sweater front.

Exercise #2: Cast on 30 st. Knit 60 rows, tension 7. Cast off. Turn knitted piece sideways and put the 60 rows back to the machine, purl side up. Stretch knit as far as possible to get it onto 26 needles. Pull out 1 more needle each side and knit 36 to 40 rows on tension 3 or 4. Cast off.

To put the stitches on to the machine needles, bend side edge (the edge which is to be put on) towards you, so that the end stitches at the bend are showing as a perfect row of loops. Follow the row exactly to get a neat line. Fold facing to back side, baste and slipstitch in place.

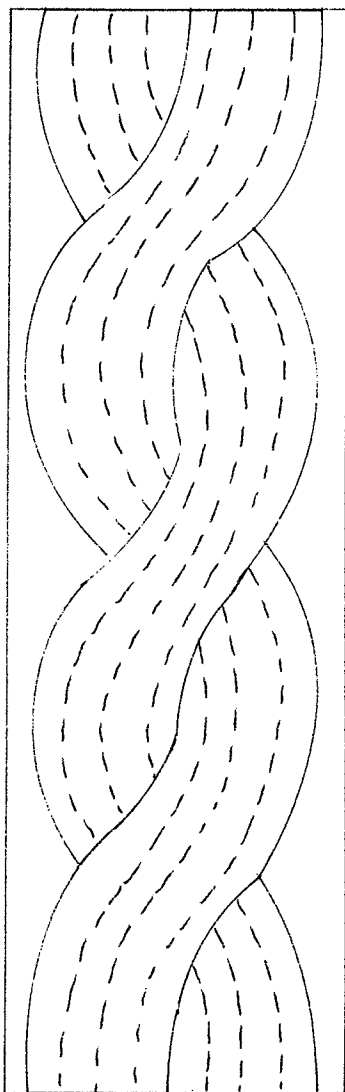
Exercise #3: Knit a piece exactly as #2; put the side edge back to the machine, knit side up. Knit 36 to 40 rows on every other needle, tension 3 or 4, take off on contrast yarn. Fold facing to front side, and backstitch in place, going in every loop, as we have learned on Page 85.

THE CABLE STITCHES

1. To get the cable effect, we have to cross a group of stitches over another group of stitches.
2. To do so, we need 2 "three-prong" transfer tools to cross 3 over 3 or 2 "two-prong" transfer tools to cross 2 over 2 stitches.
3. How many stitches can we cross? 2 over 2 or 3 over 3 is the most common. 1 over 1 can give a very dainty vertical effect. More than 3 over 3 is nearly impossible because the stitches can, in most cases, not be pulled over more than 3 needles. One would also have to take them off on contrast yarn, to be able to cross them, unless one has 2 "Multi-prong" transfer tools.
4. The elasticity of the yarn is an important factor too. An unelastic nylon yarn is much more difficult to pull over several stitches than a wool.
5. If we drop the border stitch each side of the cable in order to form the vertical row of purl stitches, it is most favourably done just before crossing the stitches, because it gives that little bit of extra leeway.
6. The tension we use should be 1 number looser than we would normally knit the yarn with. To cross for cables on tight tension is almost impossible.
7. The more rows we knit between each crossing, the bigger the cable gets, even in width. Look at exercise #3. For a basic cable one always knits the same amount of rows between the crossings, but for special effects, one can vary the amount of rows, as I have done with sample #3.
8. It is very important that one crosses always the same stitches and stays in the same vertical row.
9. Besides the basic cable, we can make double cables, as in exercise #2, or alternated cables as exercise #3. There is no limit to your creativity. I once designed 200 different cables for a book.

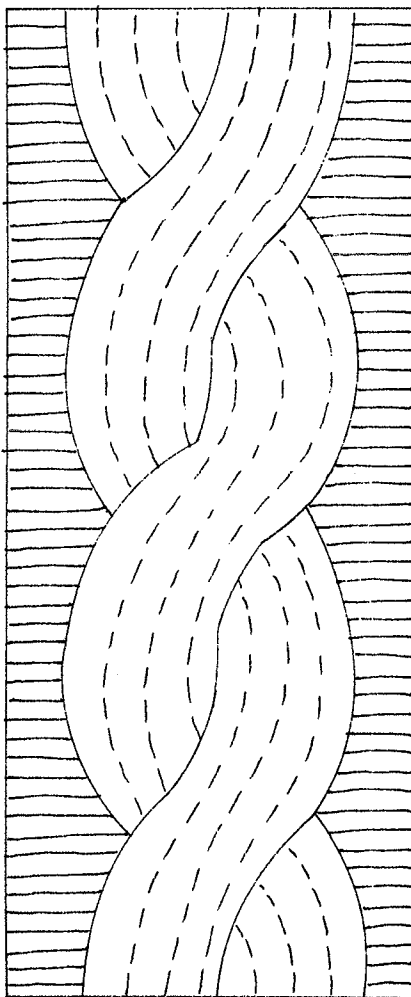
Cable Stitches, continued.

Our Sample: Cross 3 st. over 3 st. See exercise, Page 230.

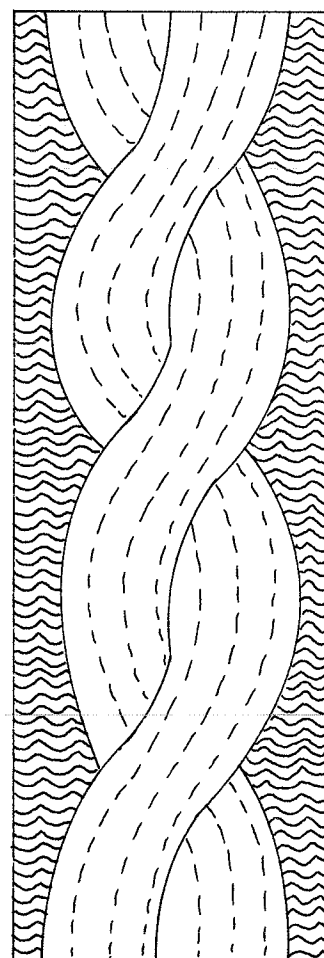


C: No borderline. The 3 over 3 stitches are just crossed in the plain fabric. Make sure that the crossing is always done with the same stitches, and with the same amount of rows between.

We have 3 cables on our sample. They are all 3 crossed the same way, only their bordering line is different. Sample "A" has a small float to border the cable. Sample "B" has a purl line and sample "C" has no bordering stitch, but is just crossed in the plain fabric.



B: The needles bordering the cable are dropped at every crossing and crocheted up later as a purl stitch.



A: The cable is bordered on both sides by one needle each in A-position.

BASIC EXERCISE FOR CABLE

Exercise #1 for Cable:

Cast on 46 stitches, 22 stitches left of center 0 and 24 st. right of center 0. Tension should be rather loose. Take tension 8 for 4-ply yarn.

Our sample will have 3 cables. All 3 are crossed the same way, but have different borders. We have 6 stitches plain knit between each cable.

Knit back and forth. Counting from right to left, transfer stitch 7 to needle 6, stitch 14 to needle 15, and put the empty needles back into B-position. This is the base of the purl stitch line, bordering sample A.

Transfer stitch 21 to needle 20 and stitch 28 to needle 29. Leave the empty needles in A-position for the rest of your sample.

Knit 6 rows over all working needles, then cross for all 3 cables the following way:

Start with Cable A in the center. This cable is bordered by the A-position needles. Take two three-prong tools. Put stitch 1, 2 and 3 left of center 0 onto your transfer tool, lift the stitches off and hold them down. Take stitch 1, 2 and 3 right of center 0 onto the other transfer tool and transfer those 3 stitches to needle 1, 2 and 3 left of center, (the needles we had just emptied before). Now put the 3 stitches remaining on the first transfer tool onto needle 1, 2 and 3 right of center. The needles in A-position form a little float, bordering the cable.

Cross cable B at right side the same way, only drop the stitch from needle 7 and 14 before crossing. Let those 2 stitches go down all the way - they are secured at the bottom. Do not forget to put the empty needles immediately back to B-position. Those "fallen stitches" are picked up later and crocheted up with the latch tool. They appear as a "purl-stitch", bordering the cable on either side.

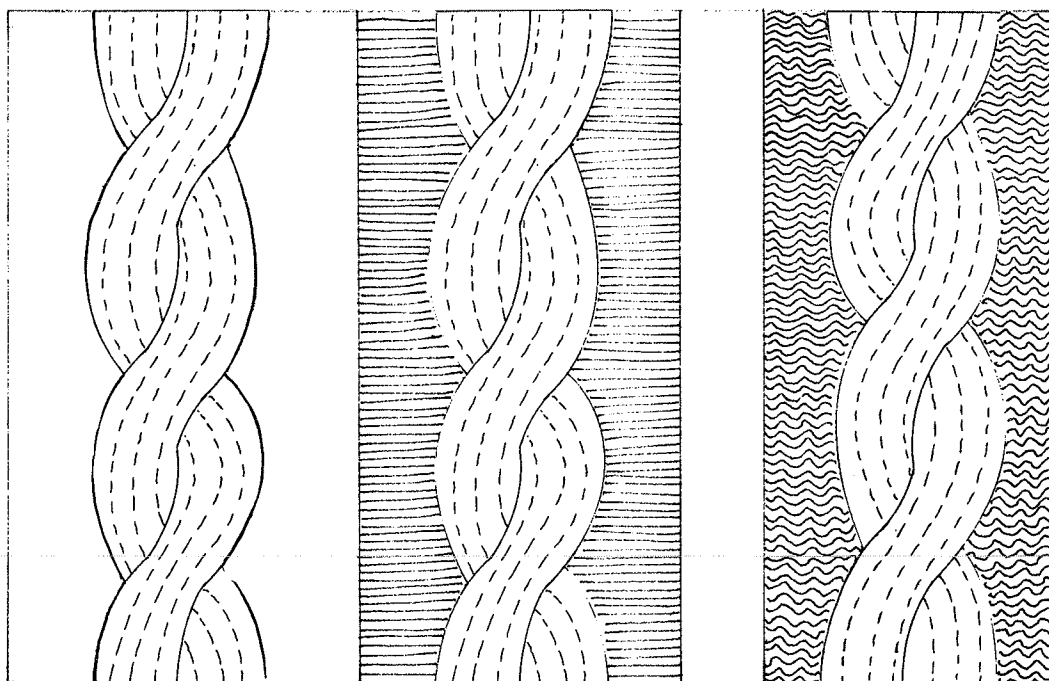
Exercise #1 for Cable (continued)

Cable C is just crossed 3 over 3 stitches without any vertical border line. It is very important to always cross the same stitches and not to break the conformity of the pattern.

After all 3 cables have been crossed in a row, knit 10 rows plain stockinette and cross them all 3 again in the same manner. Repeat.

Cross all cables 6 times. End with 3 rows plain stockinette. Still drop the stitches of needle 7 and needle 14. Now crochet the stitch-floats, bordering cable C upwards like a chain stitch. This should be done while the sample is still on the machine, because one needs to pull the sample tight, in order to crochet properly. Hang the crochet stitches at the top back to their corresponding needles and cast off.

Be careful not to steam the cables flat.

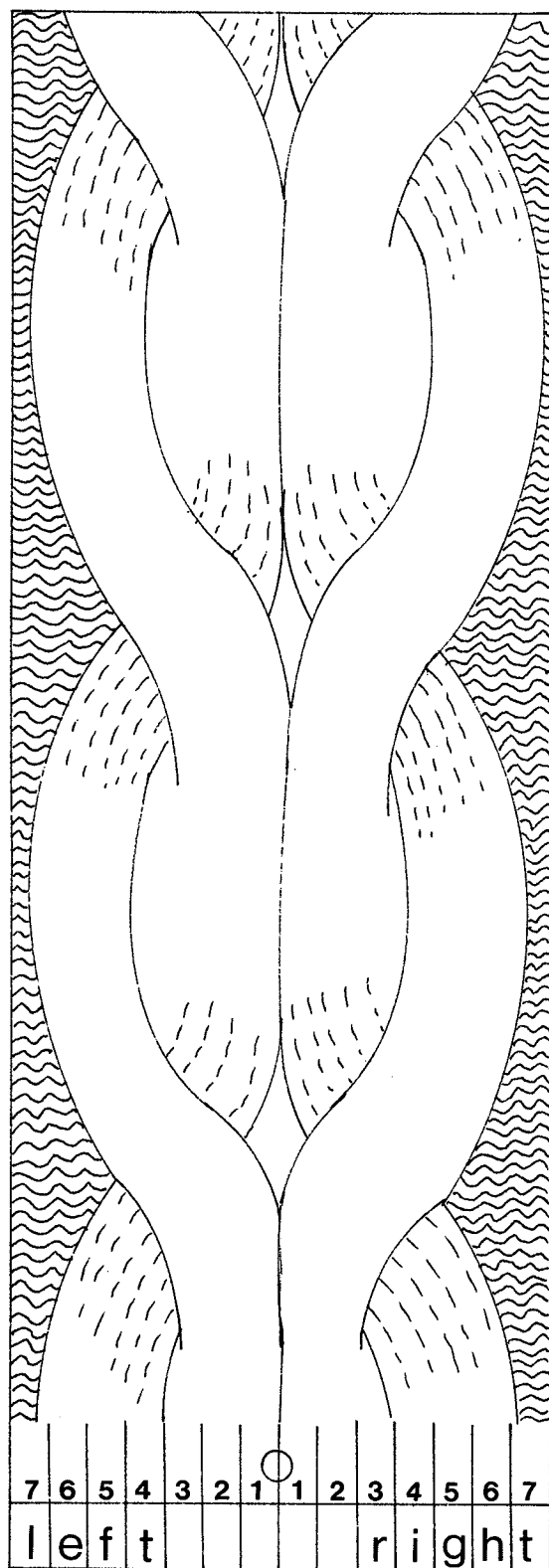


C. no vertical
borderline

A. bordered
by floats

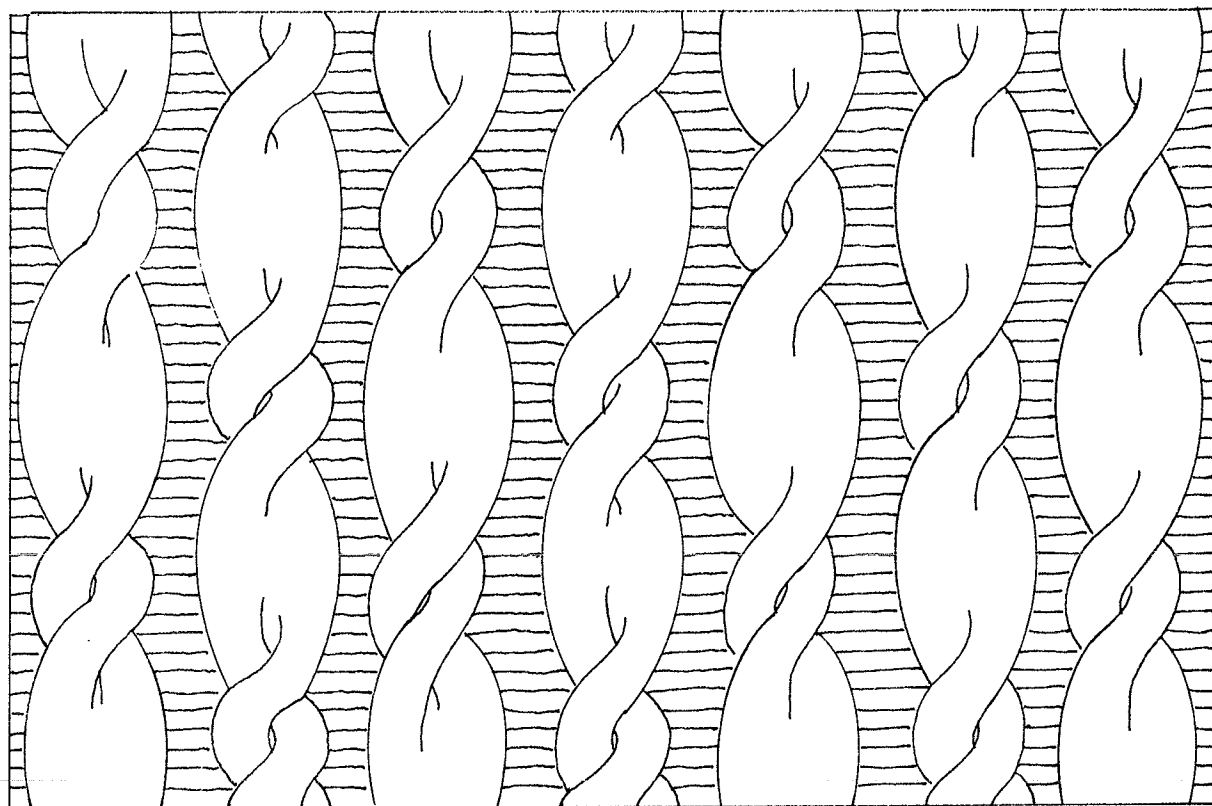
B. bordered by
purl stitch

DOUBLE CABLE - EXERCISE



3 st. are crossed over 3 st. from each side of center to the outside. Exercise: Plan the cable in the center of machine. 6 st. right of 0, 6 st. left of 0. Transfer on both sides stitch 7 to needle 8 and put needle 7 back into working position. Knit 10 or 12 rows between each crossing. Work with both 3 prong tools. Crossing: First pick up st. 4-5 and 6, right of center. Lift and hold down. Now pick up with other tool st. 1-2 and 3 right of center, lift and transfer to empty needle 4-5 and 6. Now take remaining 3 st. and put onto needles 1-2 and 3. This completes right side of cable. Now pick up st. 4-5 and 6, left of 0. Lift and hold down. Pick up with other tool st. 1-2 and 3, lift and transfer to needle 4-5 and 6. Then put remaining 3 st. onto needle 1-2 and 3. This completes the crossings for the cable. The st. of needle 7 on each side are slipped off at each crossing (needle immediately back to B-position). Let st. run down. They are picked up later with the latch tool as a purl stitch.

ALTERNATED CABLE - EXERCISE



For waist or yoke where pattern is not started at the bottom. Plan 5 cables, 3 over 3 st. plus one st. each between them and 3 end st. each side. Sample has 42 st. (5 cables, 6 single "purl" st. and 6 end st.) Knit 20 rows straight over all stitches.

Set for cable, starting with center cable (3 st. each side of 0). Slip every 7th st. 6 rows down and secure with safety pins.

*Cross every other cable, pull empty needles back into work, knit 6 rows. Slip same st. down again and cross same cables. Knit 6 rows. Slip same st. down and cross alternated cables. Knit 6 rows. Slip same st. down and cross the same cable again. Knit 6 rows and repeat from * 2 or 3 times, after the last 6 rows, slip the same st. down again (but do not cross anymore). Crochet all 6 slipped stitches up with the latch tool and put them onto the empty needles. Knit 20 rows plain over all needles and cast off.

ALTERNATED - CABLE

Pattern worked into a solid
knit ground. (See Page 233)

THE WEAVE KNIT

Weave Knit is a method to use fancy boucle yarns, thick and thin, or bulky yarns, which normally do not knit on our machines.

The base is knitted with a medium weight or fine yarn, fed through feeder 1. The weave yarn is laid across and knitted in, according to punch card pattern.

First, we have to install the "weaving arm". The dial stays on stockinette. Tension is usually 1 number looser than it would be for the basic yarn, but a tighter or looser tension can alter the pattern sometimes to a very interesting design.

The weaving yarn is hooked around the yarnholder, facing the direction in which the carriage is moved. Therefore, it must be changed after each row. It is advisable to use weights on both ends of the knit and to pull the end needles to D-position each row.

To find out how the weave works, unravel one or two rows carefully.

To obtain special effects, we can weave very thick yarn, or even string beads or raffia in by hand. (No punch cards). One has to put the weaving thread by hand over and under selected needles according to the effect one wants to get. Then, one knits with the base yarn over it. One row, or several rows, depending on the desired pattern.

In this way, one can also weave vertical panels or even motifs by weaving the "weave yarn" in only partially, letting it hang down and turning it for the next pattern row.

WEAVE - K N I T

Textured fabric design
with different yarns

Weave Knit (continued)

Exercise: Cast on 40 st. Knit 4 rows with basic yarn. Take punch card #3 and "weave-knit" 30 rows. Block the card and "weave-knit" another 30 rows. Take punch card #7 and weave-knit 30 rows. Take punch card #4 and weave-knit 30 rows. Take punch card #8 and weave-knit 30 rows. Experiment on your own with different yarns and cards.

TO REPAIR STITCHES IN A WEAWE KNIT

- 1.) Check every row for missed stitches in the weave because one can only repair it right away.
- 2.) Slip the "missed" stitch one row down, or, for safety reasons, go with your transfer tool one row below and lift the bar onto the needle, as for regular repair, pulling the needle then to D-position. We have the stitch, the main float of the top row and the weaving thread all 3 layed over the needle to be repaired. Untangle them so that they lay straight, with the weave in front of the main float. Now pull the float of the main stitch over the float of the missed weave into the needle hook, in front of the latch. (The weave has to stay behind the latch). Knit the stitch back in by hand. A perfect "repair" is done.

Weave-Knit on every other needle

If one is working on every other needle with a heavier basic yarn, and is weaving a very thick and textured yarn in (even Card 3 does not work!), then one does best by laying the yarn in by hand, over and under selected needles in D - position. (OVER 3 - 5 needles, but UNDER only one needles.) The sequence of the weaving needles can be at random because one would not see a pattern in the thick textured yarn anyway. (No Card!) Then one Knits one or two rows stockinette over all working needles and lays the weaving yarn in again for the next row.

For special effects one can even weave raffia or string beads in by hand in the same manner.

Vertical panels or motifs can also be done the same way, by laying the "weave yarn" in only partially, letting it hang down and turning it for the next pattern row.

KNITTING A GARMENT SIDEWAYS

If we knit a garment sideways, our rows become the width and our stitches become the length of the garment.

We therefore are limited with our length, because we have only 200 needles to work with. That is usually enough for sweaters and cardigans, but for skirt length it depends on the fashion trend, or individual size. If the fabric is not long enough, one has to design with a different yoke effect or a bottom panel because grafting the rows of two pieces INVISIBLY together does not work. No matter how well you graft, it will leave a horizontal line in your garment. So, we have to consider that and design accordingly.

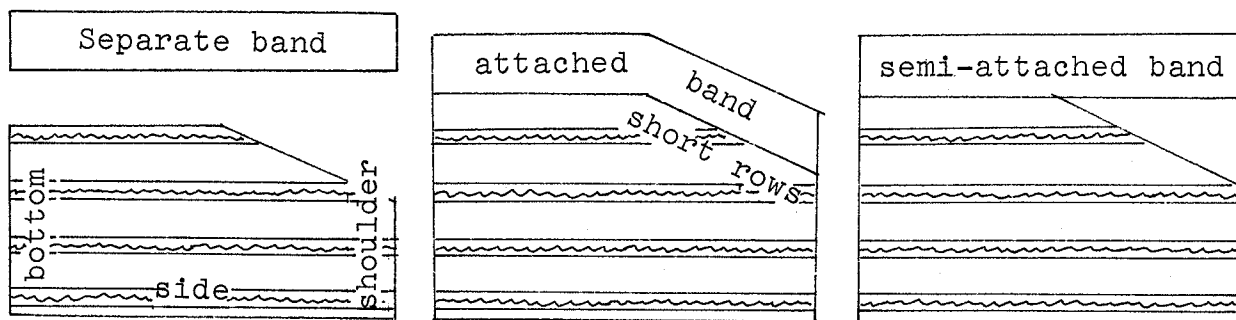
Instead of a yoke or a bottom panel, one can also accent the grafted seam with a small knitted braid. If sideways knit is used for a dress, the same thing applies. One has to purposely accent the grafting line if one cannot use it under a belt. A good way is to put in a casing with a drawstring at the seam line. But that again depends much on the fashion trend.

Here are the different points explained:

1. Start first with knitting a big enough sample with your stripe, or try out whatever pattern is used. It has to be planned properly, where exactly you want your stripe or border to be.
2. If shape is difficult to form, then knit straight pieces and cut and sew, or semi-calculate. One often wants to try out or drape the pattern-width or a dropped shoulder line with the knitted fabric.

Knitting Sideways, continued

3. Can we match stripes or any other continuous pattern at both shoulders if we have an open front or cardigan type sweater?
4. We knit the back piece first, starting at the center back with an open cast-on. We knit the pattern to side seam, then put center stitches back to the machine and knit the pattern to the other side. This way the shoulders will correspond, providing the stripe or pattern in front is also worked from center to sides on both parts.
5. The "Knitted-in" pockets have to be established on your paper pattern on the proper spot. It is a good practise to "calculate" by taking the already knitted and blocked "back-piece" to try out where you want them exactly. (See exercise for pockets in sideways knits, Page 101.
6. Front and neckbands in a V-neck cardigan can be knitted separately and sewn or grafted on carefully. They can also be knitted together with the garment, shaped with short rows at V-neckline. (3 stitches every other row, if no special calculation is necessary). One can knit them "semi-attached" which means attached at the straight part, but separate at the slant, which is already knitted to calculation. Watch for little seam allowance then.



CONSTRUCTION OF A DIAGONAL KNIT

See Diagram, Page 243.

We are working with a semi-calculated method, which will be "Cut and Sewn" later on.

1. Draw your pattern (including seam allowance) with a heavy outline on a sheet of paper and leave the paper space around it. Fold it in half to establish the center line of garment. Do not cut out!
2. Establish your new diagonal center line, starting from your right bottom corner. Align your triangle with the garment center on the rectangle side, so that the diagonal line hits the center at a 45° angle. Draw the line in red. Mark it 5 cm by 5 cm and put your rows onto it, according to gauge. (With a gauge of 14 st. and 20 rows, the marks read: 0-20-40-60-80, etc.)
3. Draw all your "horizontal" lines every 5 cm in a 90° angle to your red diagonal center line and continue them over your pattern outline. Mark them every 5 cm and draw the corresponding vertical lines.
4. Our "cast-on" is established between the horizontal at point 0 and the verticals on both sides, coming close to the pattern outlines. They are sometimes quite different on each side. Each 5 cm square represents (with our assumed gauge of 14 st.

Diagonal Knit #4 (continued)

to 20 rows) 14 stitches in width. On our child's skirt, for instance, we have 14 st. on our right side of 0 and 3x14 st. on our left side of 0, which represents a cast-on of 56 st. On our sweater shape it is 28 st.

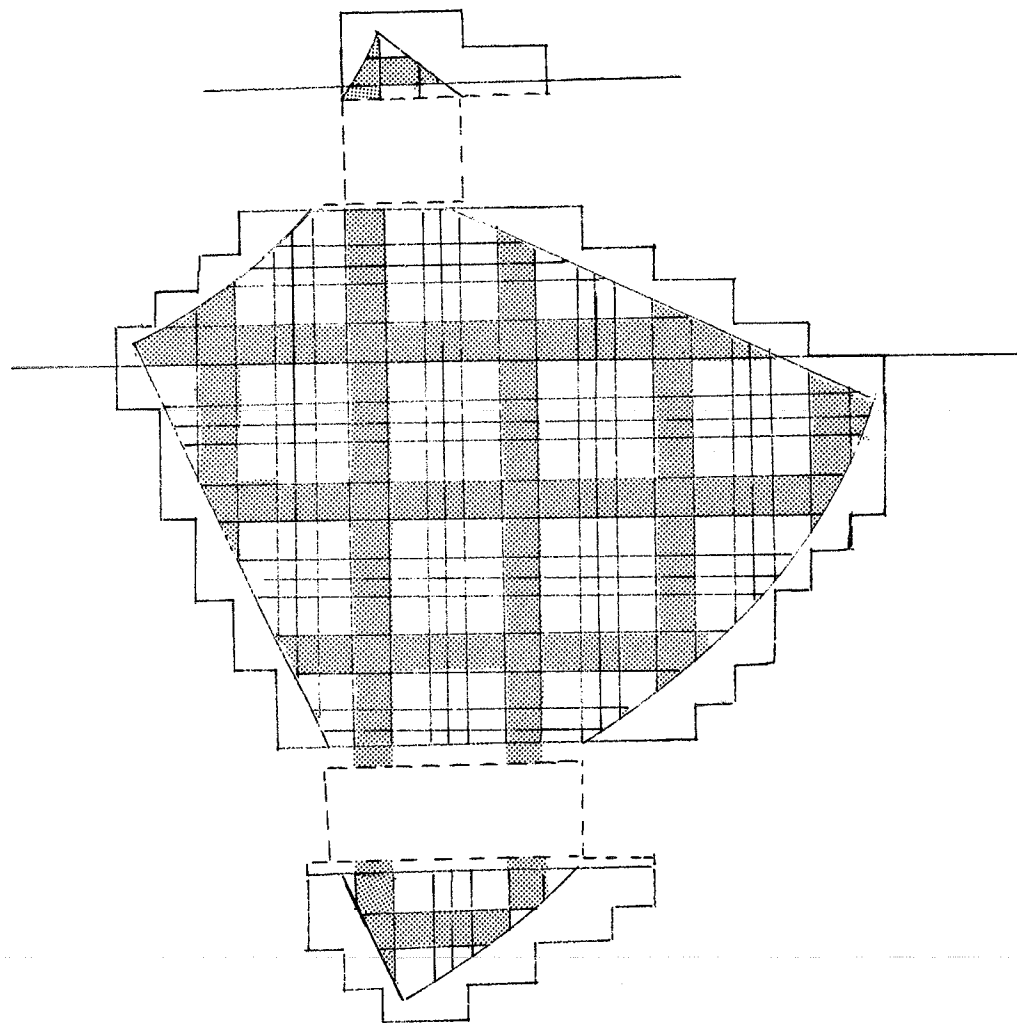
5. A very important point is where to establish the center-spot on our needle bed, while we are casting on. This is one of the few occasions where our center 0 mark on the machine does NOT correspond with the center line of our knit. If we look at our pattern, we see that our red diagonal center line divides the pattern quite unevenly. Looking at the child's skirt, we will need ca. 50 st. right of the red line, and ca. 147 st. left of the red line. Our diagonal center would therefore be on the "50 mark" right of 0. Mark that on the machine.

On our sweater shape, we need ca. 110 st. at the right side of the red line and 90 st. at left. We mark our machine 10 st. left of center 0.

With our adult size skirt, having the longer fashion length of today, we do not quite make the needed width of the knit, with the limitation of 200 needles on our needle bed. Therefore, we have to graft-in pieces. In a pattern, like any "knit-in" or plaid, this is quite invisible. In a plain skirt it would show,

Diagonal Knit (continued)

however good our grafting may be. (But then, one would not really need a diagonal construction, but would rather work in panels or gores). For our construction, I choose to add a corner of knitted fabric at the right top, as well as at the left bottom. I found it less visible in two small pieces than having to add just ONE BIG CORNER.



Allow about 3-4 stitches for grafting and make sure that the added corners fit your knit pattern 100%. The lines of the calculation net will be a good help for that. Make sure that your match is at the graft line and not at the outer edge.

"SPACE-KNITTING" WITH SELF FRINGE

Finished with Hemstitchery.

This is an interesting technique which is especially suited for shawls, because it gives a very decorative, open effect. One can work it in wool, cotton, linen, orlon, or any mixture. Chenille with it's velvety look creates a very beautiful effect, especially if the pattern border is big and bold.

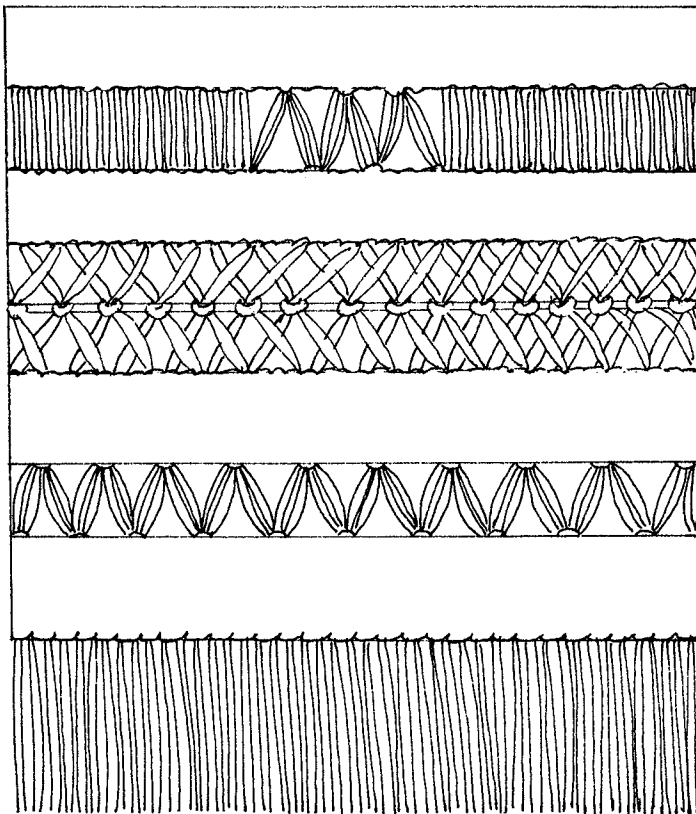
Small hemstitch lines on the other hand, can be very dainty looking for tailored little sweaters, which are knitted sideways, so that the hemstitch lines are vertical.

The technique itself is based on the old fashioned "drawn work" where one draws out threads of the fabric in horizontal direction and pulls the vertical threads together with hemstitching in different patterns.

Transposing that technique to our knitting machine, we leave groups of needles empty, to create horizontal floats, which are similar to the "drawn work". Those floats, then are hemstitched in various patterns. The more needles one leaves empty, the wider and bolder gets the pattern.

The hemstitch as such is worked from the wrong side. For the basic stitch I usually bundle 4 threads together. If one works both sides (top and bottom line) with the same bundle of 4 threads one gets the very well known "ladder effect". If one bundles the second side alternated, by using 2 threads of each previous bundle, one gets a zig-zag effect. The largest float on our sample, over 14 needles, can be twisted in the center with extra yarn. The fringe has to be either secured with hemstitching or knotted, otherwise the rows will shift.

"Space Knitting" with Self-Fringe, Finished with Hemstitching
(continued)



Exercise:

Cast on over 110 stitches.
Start on left side of 0 at
mark 6 and cast on 2 st.
Leave next 28 st. in A-
position (we are at mark 3).
Cast on 10 st. between 3
and 2, by winding thread
around needles. Leave
6 st. in A-position. Cast
on the next 10 st. Leave
14 st. in A-position.
Cast on the next 10 st.

Leave 8 st. in A-position. Cast on the next 10 st. Leave 10 st.
in A-position. Cast on 2 more stitches.

Knit about 60 - 70 rows and cast off.

Steam. Bundle the vertical threads with hemstitching together,
at the same time securing the edges.

Knot fringe or secure it with hemstitching. (The two end
stitches at the fringe bottom are cut off.)

THE SLIP STITCH PATTERNS

Slip stitch patterns are an interesting variation of our knit, but they are not easy to use for garment.

1. The gauge is not countable, so one has to establish it with a predetermined amount of stitches and rows, as for tuck patterns. See page 186, paragraph 8.
2. The slip pattern "shrinks" in width, like the tuck pattern, but they shrink a lot more in length, depending on the stitch pattern which is used; especially the raised and braided structures, which use a lot more yarn than regular knit patterns.
3. Most likely, one will use the raised and braided pattern more as a decorative accent, instead of an allover effect. Because of the shrinkage in width between a plain stockinette and a braided slip pattern, one has to balance with the tension, knitting the slip pattern on a much looser tension than the straight stockinette to achieve the same width in the fabric. Each yarn and pattern acts differently, therefore one has to try it out each time.
4. For the technique itself, note: The "slip" slips over the unpunched fields and is tacked down through the punched holes. In other words, the punched holes knit stockinette, the unpunched fields "slip".
5. Keep front levers on II and knit in a fairly loose tension.

Slip Stitch Pattern (continued)

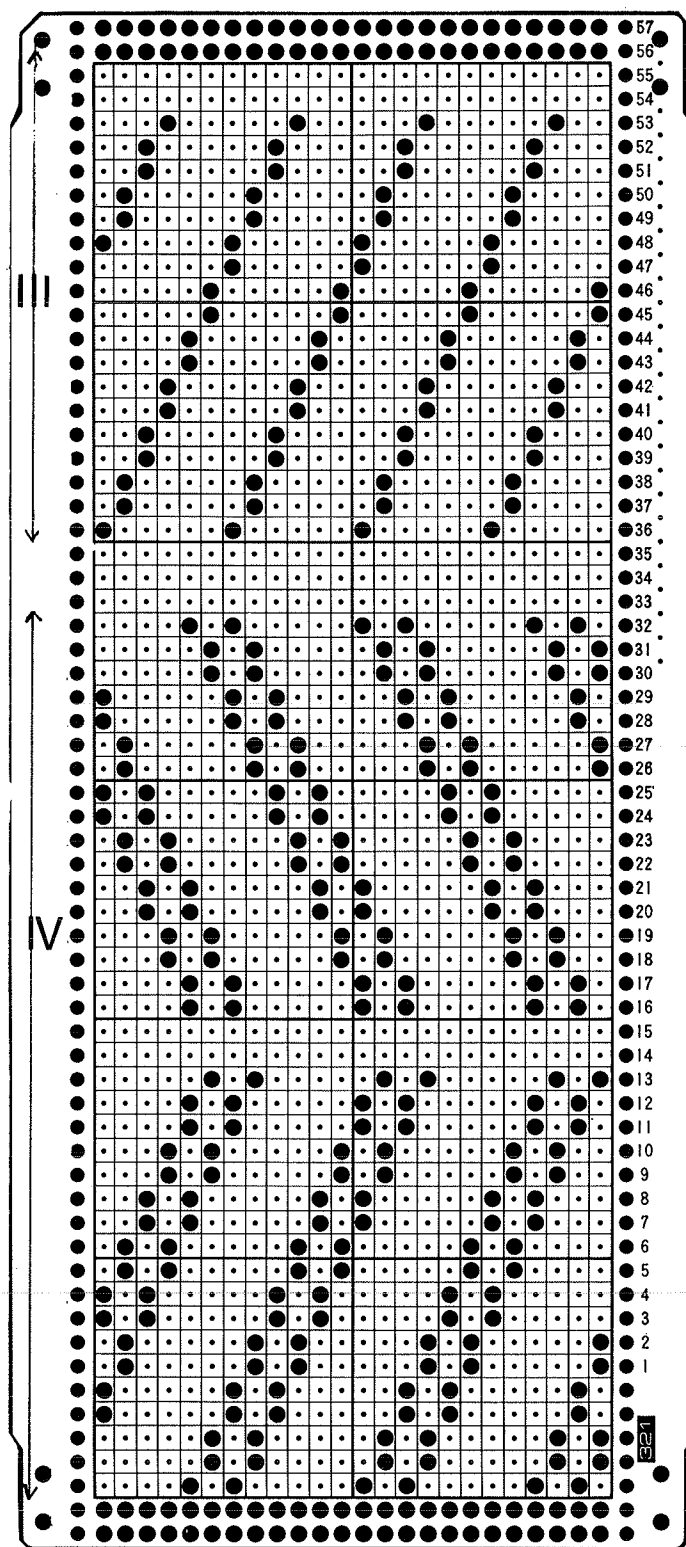
It is better to knit without weights, because too much "pull" makes the pattern skip instead of slip. Yarn separators should be used at both ends to prevent the first stitches from skipping. Move the carriage slowly and check the end stitches because if they do not knit, or are pulled to the front, or drop off the machine, the whole row falls off, especially with the big braided pattern.

6. If one wants a flat effect, with horizontal lines decorating a purl background in a small structural pattern, arranged in bars, Pattern I; zigzags or dainty vertical lines, Pattern II, Page 248, the card looks mainly punched with the unpunched fields creating the design.
7. If one wants a raised or braided effect, one slips over several stitches (5 to 7 st.) and ties them in, with just one or two stockinette stitches at a time, which then shows as the punched holes in a mainly unpunched background.
8. A very easy, but effective little pattern is the raised, horizontal line, almost like a pleated tuck in a purl background. It forms through a one by one alternated punch row, blocked in and slipped over for about 8 rows. See card line below:

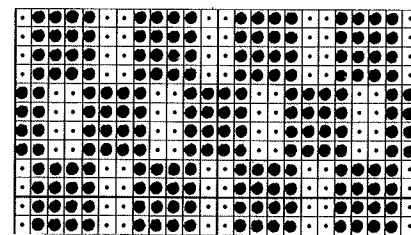


The pattern is knitted up in the big slip stitch sample. Page 249, as #1 at the bottom, and the top. As a variation, knit the 8 slipped rows in a contrasting colour.

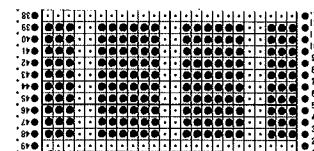
SLIP PATTERN - PUNCH CARD



The punched holes knit stockinette, the unpunched fields slip.



I Small alternated structural slip pattern on purl background.



II Slipstitch pattern in a fine vertical stripe arrangement.

III Slipstitch pattern in a corded effect. The "slips" are moved diagonally to one side, every other row.

IV Slipstitch pattern - a braided effect. Knit 18 rows on slip, 2 rows on stockinette (row 19 and 20 on punch card) and again 17 rows on slip.

Pattern III and IV are knitted up in the "slip-knit", next page.

SLIP - STITCH - PATTERN

See Card Page 248

PLEATS IN KNITS

Can one make pleats in knits? I am not all for it, because to me a pleat in knit goes against my conviction of what a knit should be. Nevertheless, fashion goes its own way and I still remember times where we had to make pleated knit skirts.

I am not talking about a plissee-effect, which is done with the double-bed attachment in a knit and purl rib. The rib gives a very graceful looking plissee fabric which hangs very well and is light and easy to wear.

I am talking of regular 3 fold pleats, which, if not done in very light yarn, can become very heavy and bulky. But even so, they still have their place.

There are two main methods of making those pleats:

1. We knit sideways. The width of our machine becomes the length of the skirt. If that is not long enough, one has to design a yoke. The outside crease of the pleat is a loose row, as we use for the folds of our hems. (Page 17). The inside crease is a tight row.

The hemming causes some difficulties. The best is a good firm edge, which does not need a hem. One can end the skirt with a crochet row or even with a small seamband inside, to give the bottom a bit more weight. (Exercise 1 and 2 on Page 252).

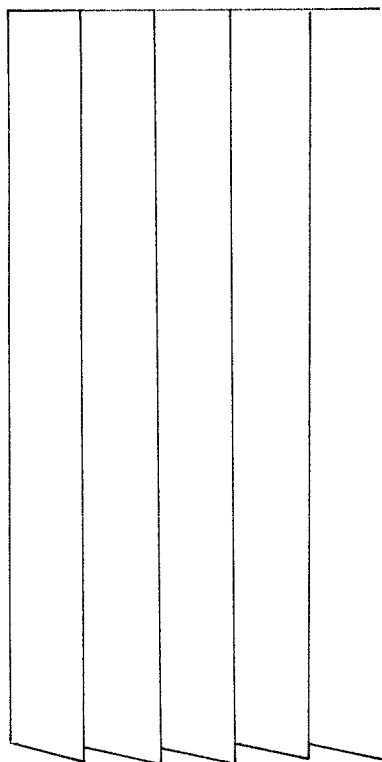
2. The other way to make pleats is regular knit from "bottom to top". We achieve the crease by either leaving one needle in A-position for the outside crease as well as for the inside

Pleats in Knits (continued)

crease, or we fold the pleat just along the row and crochet over the crease with a small hook in a slipstitch (which is half a single crochet) on the outside of the crease as well as from the inside of the pleat. (Exercise #3, Page 253). One can also combine these two methods. It depends on the yarn.

3. A variation of the pleats knitted sideways (Exercise #1, Page 252) is a flared out pleat where we put small gores into the pleats with short rows to widen them at the bottom. (Exercise #4, Page 254).
4. The so called soft pleats are another way to reduce a wide skirt to a small yoke. They are done like little box pleats and left unsteamed. In our exercise we pleat 2 stitches in, 2 stitches out and 2 stitches in again. One can do the same with 3 stitches and use 18 needles instead of 12. (Exercise #5, Page 255).
5. The soft gathering is also a way to reduce fabric, either to a half or to a third of the original width. One has to knit a skirt in 3 or 4 panels and graft vertically, which in a plain knit always leaves a little mark. Avoid having the graft in the center front of the skirt. (Exercise #6, Page 256)
6. Knitting a gathered sleeve into a tight casing is explained at the bottom of page 256. One can also use the exercise # 10 on page 41 where we increase inside the fabric instead of reducing the fabric; but the increase does not give as much gather than the reducing method.

Pleats in Knits (continued)



We knit sideways use fine yarn.

Exercise #1: Cast on 60 st.

Knit 30 rows Tension $3\frac{1}{2}$

*Knit 1 row Tension 8

Knit 19 rows Tension $3\frac{1}{2}$

Knit 1 row Tension 0

Knit 39 rows Tension $3\frac{1}{2}$

Repeat *

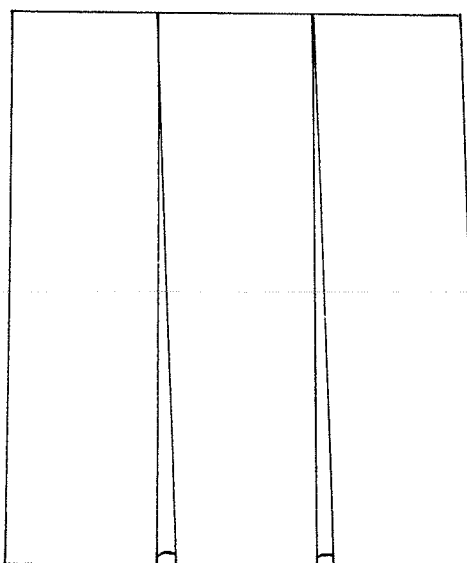
Make 4 - 5 pleats. End with 20 rows on tension $3\frac{1}{2}$ after the loose row. Baste the pleats in their foldline and steam carefully.

Exercise #2:

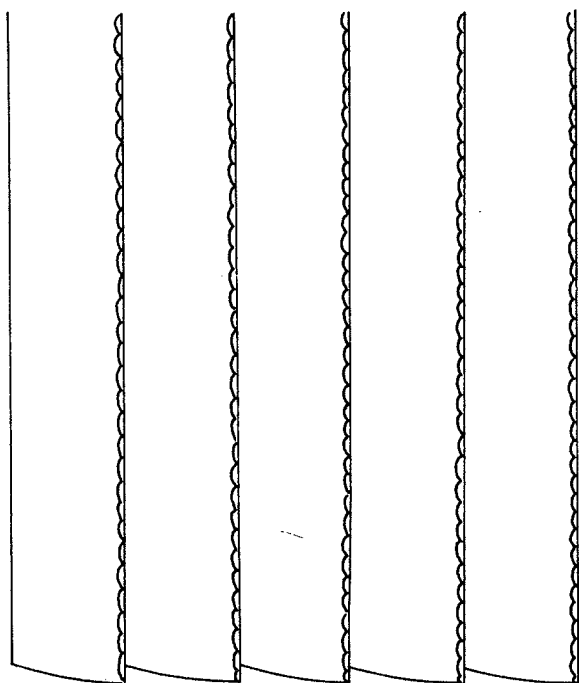
Make a box pleat up
yourself, using the
same principle.

For waistband

see page 154



Pleats in Knits (continued)



Exercise #3: Cast on 130 st. (for sample) For skirt panels take all 200 stitches.

We are knitting straight panels the full length of the skirt.

Fold pleats over 12 and 6 stitches and crochet along the crease, watching to stay in the same stitchline with slipstitch, outside as well as inside the pleat. This will set the pleats.

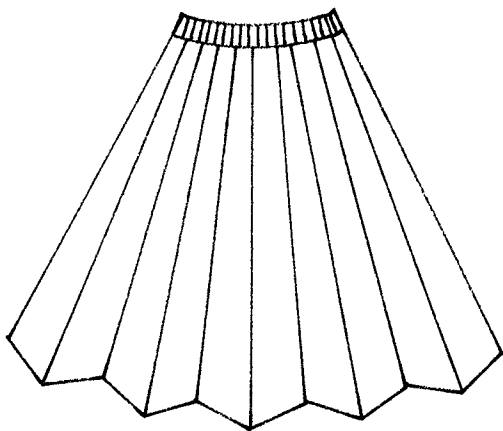
For adding another panel, plan to crochet them together at the inside crease instead of grafting it.

To avoid bulk at the waist, knit 1 row through all 3 thicknesses, (purl-side up), pulling the needles to D-position and if necessary, helping it by hand.

Continue knitting the waistband, double width. Cast off. Turn it to the inside and sew in place.

If one wants the waistband turned to the outside and graft it over top of the pleats, one has to pick up the pleats, knit-side up and take off on contrast yarn, to be ready for the grafting, (see Neckline, Page 85).

SINGLE "PRESSED PLEATS"
knitted sideways, (tapered)



The skirt is knitted sideways. The outer fold of the pleat is ONE row on a loose tension, the inner fold consists of TWO rows on a very tight tension. The pleats are tapered by using "short rows".

Exercise: Cast on 60 stitches. Knit on a tension to suit yarn. I used tension 4 for fine yarn, (2/15 Acrylic.)

Knit 8 rows regular tension (I used tension 4)

* Knit 1 row very loose tension (I used tension 9)

Knit 3 rows regular tension

Knit 3 times back and forth with short rows, using sections of 15 stitches each as follows: You pull out to D-position all but the first 15 needles. Knit short rows back and forth over 15 needles. Push next 15 needles to C-position. Knit short rows back and forth over 30 needles. Push next 15 needles to C-position. Knit short rows back and forth over 45 needles.

Knit 4 rows regular tension over all 60 needles.

Knit 2 rows on very tight tension (I used tension 0)

Knit 4 rows regular tension

Knit 3 times back and forth with short rows as before

Knit 4 rows regular tension and repeat from * (knit on row very loose)

This is one pleat. Knit 6 - 10 pleats, baste and press.

For the band hang knit back to the machine, knit side facing you. Hang each pleat-part to 4 needles. Knit 16 rows tension 3.

Take off on contrast yarn, fold and graft to knit side.

SOFT PLEATS

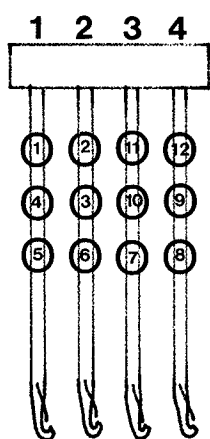
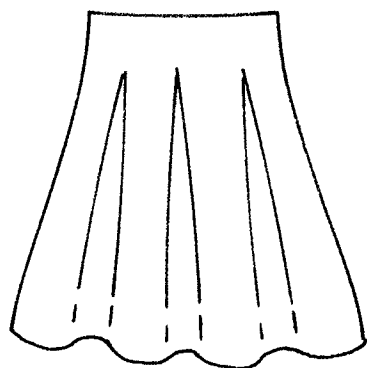


Fig. I. Diagram of hanging order

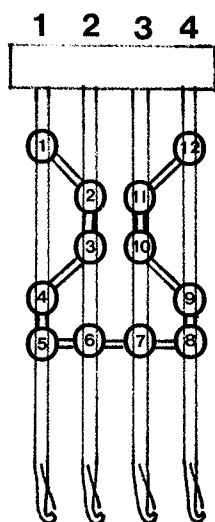


Fig. II: The way it looks at the end of phase III

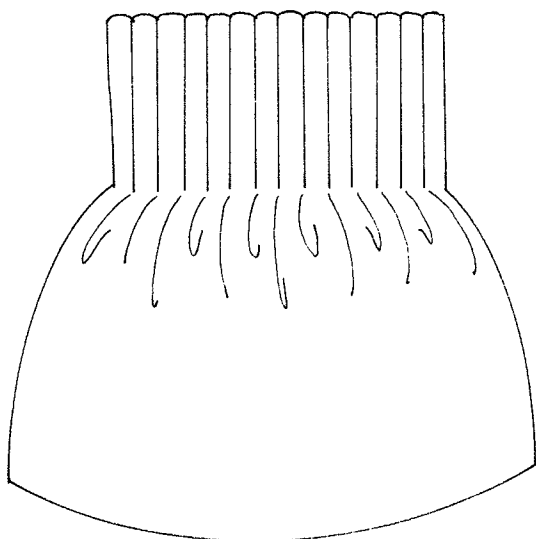
Preferable with soft, fine yarn. Exercise #5: Cast on 60 stitches. Knit 40 rows, take off on contrast yarn. Now distribute the stitches as follows, by putting them back to the machine: Put 8 stitches to machine. Skip 4 needles and at the same time let 12 stitches hang. Put next 4 stitches to machine, skip 4 needles. 12 stitches are again left hanging. Continue 4 stitches to machine, 4 needles skipped and the 12 stitches left hanging. Put the rest of 8 stitches to machine. This will give you 3 groups of 12 stitches hanging in front of the 4 empty needles. This will make 3 pleats.

We put each group of 12 stitches now back to the machine, forming a little box pleat. We number the 12 hanging stitches from left to right 1 - 12. We call the needles 1-2-3-4.

Phase I.	put stitch	1 to needle	1
(See Fig. I)	"	"	2
	"	11 "	3
	"	12 "	4
Phase II.	put stitch	3 to needle	2
	"	4 "	1
	"	10 "	3
	"	9 "	4
Phase III.	put stitch	5 to needle	1
(See Fig. II)	"	6 to needle	2
	"	7 "	3
	"	8 "	4

All needles have 3 stitches on. Pull them to D-position and knit carefully over all needles, as long as needed.

SOFT GATHERS



With cuff or mock-rib band for skirt or sleeve:

A: by reducing width to half by hanging 2 stitches to 1 needle.

B: by reducing width to one third by hanging 3 stitches to 1 needle.

Excercise #6: Cast on 60 stitches. Knit 40 rows, take off on contrast yarn. Put stitches back to machine, reducing for "A" or for "B". "A" reduces to 30 stitches, "B" reduces to 20 stitches. Pull needles into D-position (just because there is less chance that they will fall off!) and knit one row on a tighter tension. (Tension 4, if regular tension was 7). Watch carefully that no stitches have dropped.

If a mock-rib band is wanted, one has to transfer every other stitch, in order to have every second needle empty in A-position. Knit double length of cuff or band on tension 3. Put horizontal bar of first mock-rib row to needles in A-position to fold the cuff. Knit one row over all needles on tension 7 and cast off.

If one wants to knit a gathered sleeve, it is the easiest way to start the full width of the sleeve with contrast yarn. Knit the sleeve without cuff according to calculation. Turn the sleeve around and put the stitches showing in the contrast yarn either 2 stitches ("A") or 3 stitches ("B") to each needle. (D position!) Knit the double cuff over all needles as long as wanted. Cast off and slip stitch in place. This is then not a mock-rib cuff.

ROUND YOKES

A round yoke, knitted on our "Flat Bed Machine", is quite a challenge and one should only attempt to do it if time is not an issue.

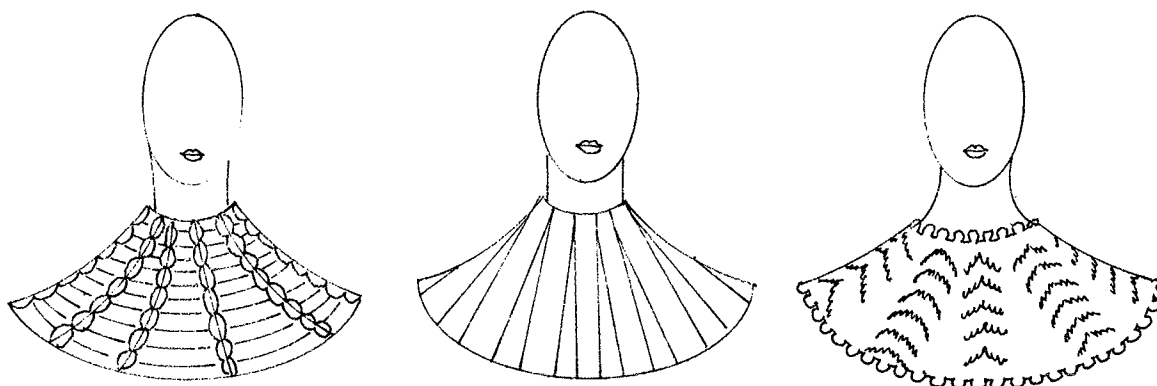
We have many different ways to construct a round yoke, but first of all the calculation has to be worked out very carefully.

1. We can start at the neck and increase.
2. We can start at the yoke and decrease.
3. For both constructions, we have to establish how many stitches are needed at the bottom of the yoke and how many stitches are needed at the top or neck part of the yoke.
4. The yoke should go over the head, therefore one has to count also how many stitches are necessary for that. If one wants a very close fit at the neck, one has to leave an opening for a zipper or small buttons.
5. We have to count how many rows are needed, between yoke line and neck line. This establishes the height of the yoke. Count only the rows from the bottom of the yoke to the neck-line. That is the area where the increases or decreases occur. If a higher neck, or a turtle neck is wanted, it would be a straight addition, either in the same pattern, in a mock rib double welt or in a knit and purl rib.

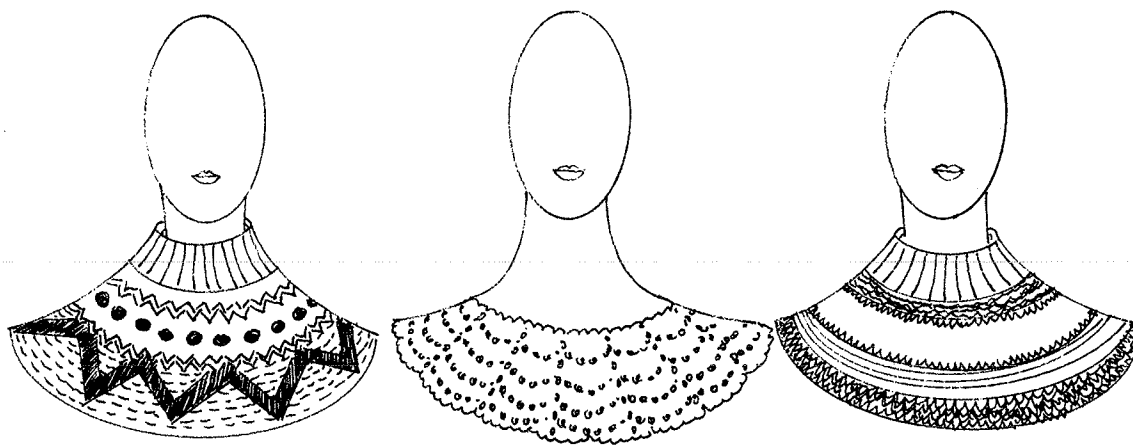
Round Yokes (continued)

6. We increase (or decrease) in sections. How many sections we select is part of the design.

If we have a design where the lines are arranged vertically, we increase or decrease basically the same way as explained for the darts, Page 135.



7. If the designs are arranged more horizontally, we decrease by taking off on contrast yarn in the same manner as we did to reduce the skirt across the fabric, page 136 , only with a different calculation.

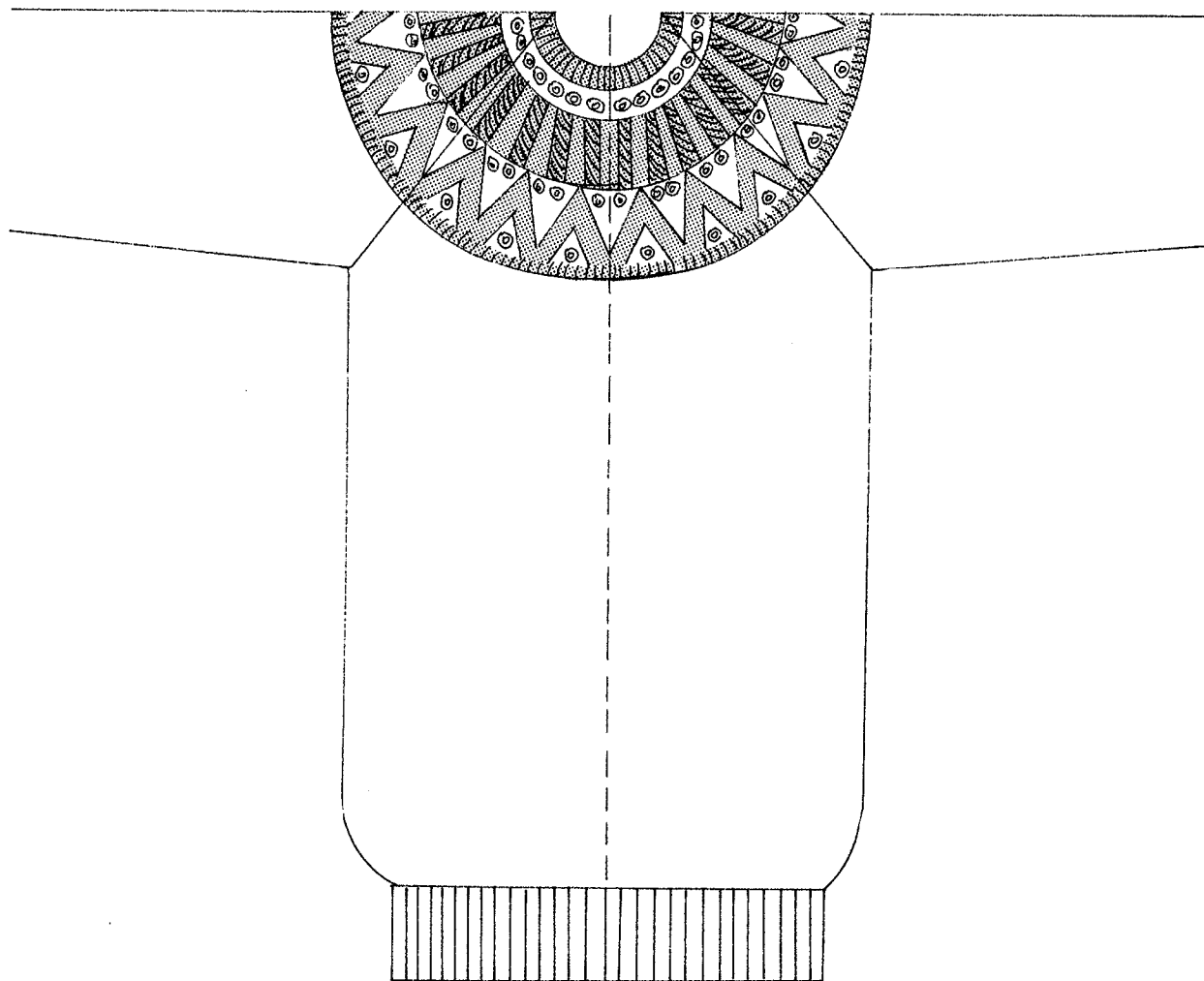


Round Yokes (continued)

8. It is in general easier to start at the bottom and decrease towards the top than to do it vice-versa and increase. The decrease also gives a somewhat neater look, but one has to be versatile and do it the most suitable way.
An important exception: if we have a lace yoke, one can incorporate the holes in the lace design in the manner that the holes are already the increase. In this case I would start at the top and increase through the lace design for the yoke.
9. After we have deducted the amount of stitches needed for the neck part, from the amount of stitches needed at the bottom (yoke part), we know how many stitches we have to decrease or increase in how many rows. (The amount of rows needed for the height of the yoke).
10. If the 200 needles of the machine are not giving enough width for the bottom of the yoke, (we get approx. 68-75 cm, depending on the tension and the yarn), one has to work a front and a back yoke, and close at the shoulder. Alternatively, one has to work the back yoke alone, just for as many rows as one needs, to or from the point where one has to use more needles, and graft the little slits in the yoke together later.
11. Front and back yoke are very often worked out alike, taking advantage of the fact that knit stretches in shape. All the well known ethnic sweaters started with a round yoke in a Fair Isle pattern, developing later into a raglan shape, are

Round Yokes (continued)

constructed with their front and back alike. Keep each center motif of the yoke design in a straight vertical line, matching the center-0-mark of the machine.



This type of sweater was mainly knitted by hand, and increases could be made without limitation. Since we are knitting with the machine, we have to split the yoke as soon as we have reached the 200 needle limit and work front, back and sleeves in separate sections, increasing for the raglan shape and grafting the seams together.

Round Yokes (continued)

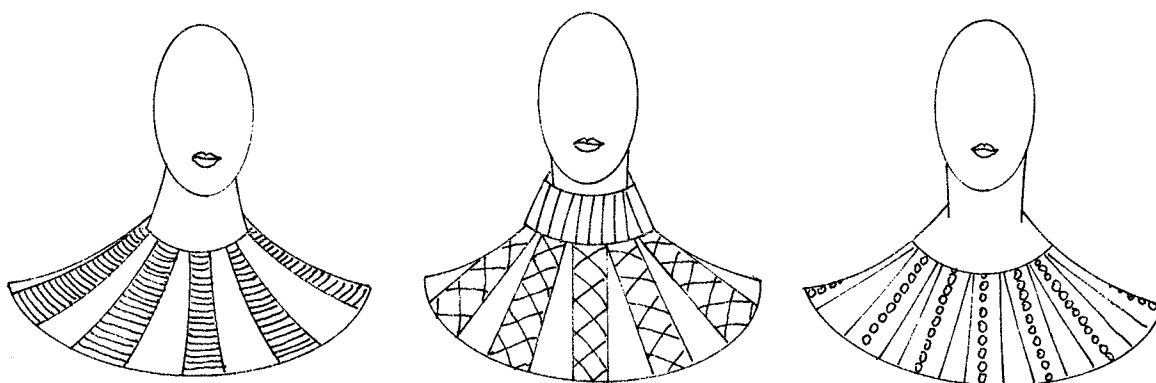
12. If we work out the raglan pattern with a round yoke and a Fair Isle design, from the top we have to increase by taking off on contrast yarn, "spreading the knit" by leaving empty needles according to calculation. We put new stitches on to those empty needles as we have learned, Page 40 , avoiding creating holes.

This increase row should be done each time between the pattern rows. If one has relatively small patterns, one can use the computer punch cards, knitting the 2 colour design always as a straight part and increase again in a one colour stripe before the next design starts. If the design is big, one would have to pull the whole design by hand and put the increases already into the design. The whole increase procedure is practically the same method as we used to decrease across the fabric for the skirt, page 136, only reversed, as for the increase darts, Page 135.

13. For a raglan sweater with a round yoke, one can also start the yoke at the bottom on contrast yarn, decrease towards the neck, knit as high as wanted and finish off. Then, one turns the yoke around and puts the bottom stitches from the contrast yarn back to the machine. Each part is knitted by itself, front, back, sleeves, each according to the raglan shape.
14. If one is working out the front and the back yoke separately, one can also construct them differently. The front yoke more rounder for the neckline and back yoke more flat. This is advisable if one has very inelastic yarn, or a very unstretchable knit pattern, or if one wants a very fitted shape.
15. We also have the possibility to knit the yoke sideways, with short row gores, which have to be calculated like the gores or flares for skirts, page 109, or page 111.

Round Yokes (continued)

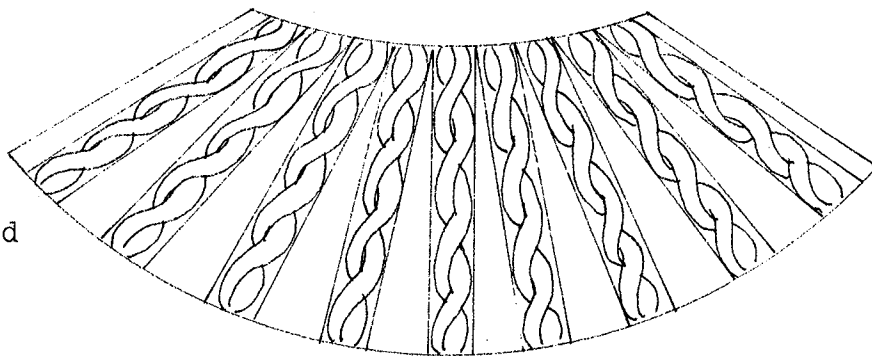
16. With this method one can design different effects again.. Stripes which appear vertical can be knitted easily in the straight part. Eyelet pattern, slip stitch braids, or knit-in combinations. One can also achieve mitre effects, if one likes to try out things and calculate.



17. On page 263 , I will give you an example and an exercise of a constructed front yoke with 9 cables, started at the top, where the cables are very close together. (1 stitch only between them). The increase takes place between the cables, where we increase 90 stitches in 56 rows in 5 increasing operations. The "increase rows" are coordinated with the cable crossing. One can also aid the shaping by loosening the tension towards the bottom.
18. Worksheet #1 gives you the complete front yoke construction in detail. Worksheet #2 is the back yoke construction, worked out flatter than the front.
19. Worksheet #3 shows you how to start the same front yoke at the bottom, decreasing toward the neck. The calculation as such stays the same.

Worksheet #1

Construction and
Calculation of a
round yoke started
at the top.

Front Part:

Width of yoke at neckline:

$$22\frac{1}{2} \text{ cm} = 63 \text{ st.} \\ (4 \times 14 \text{ st.} + 7 \text{ st.})$$

Gauge
14 st.
20 rows
= 5 cm

$$14 \text{ st.} = 5 \text{ cm} \\ 7 \text{ st.} = 2\frac{1}{2} \text{ cm} \\ 56 \text{ st.} = 20 \text{ cm}$$

We distribute 9 cables (6 st. ea.) = $9 \times 6 = 54 \text{ st.} + 1 \text{ st.}$ each
between cables (10 st.) = 64 st. at neckline. (Add 1 st. to suit calculation)

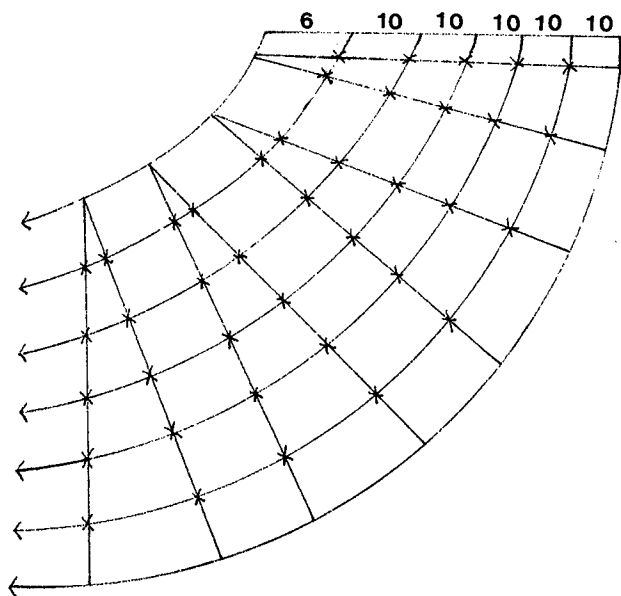
Width of yoke at bottom: 55 cm = 154 st. (11 x 14 st.)

We have to increase 90 st. ($154 - 64$) in 9 panels. (Actually 8
panels and 2 halves (each side)).

$90 \div 9 = 10$. That means an increase of 10 st. in each of the 9
panels. Since we increase 2 st. at a time in each panel (one at
each side of panel), it gives us 5 increase rows for the yoke.

Length of Yoke: 14 cm = 56 rows
(40 r. + 4x4 rows)

$$20 \text{ r.} = 5 \text{ cm.} \\ 4 \text{ r.} = 1 \text{ cm.} \\ 40 \text{ r.} = 10 \text{ cm.}$$

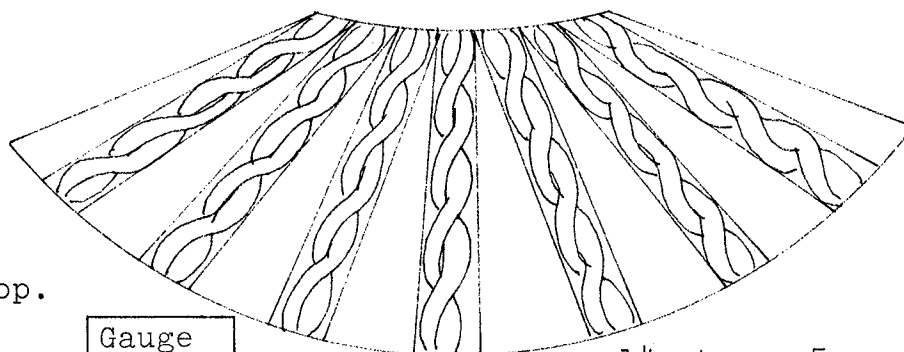


We have 5 increase rows and 6
sections. We distribute our
increase rows as $5 \times 10 \text{ rows} + 1 \times 6$
rows (= 56 rows) which we put at
the first section. If it would
suite our pattern better, we could
distribute them also as 2-8-10-
10-12-14 = 56 rows.

Remember: the first and last
panel is only $\frac{1}{2}$ a panel, which has
only 1 increase at a time and will
be grafted to the back section of
the yoke.

Worksheet #2

Construction and
Calculation of a
round yoke
started at the top.



Back Part:

Width of yoke at

neckline: $17\frac{1}{2}$ cm = 49 st. (3 + 14 st. + 7 st). 126 st. = 45 cm.

Gauge
14 st.
20 rows
= 5 cm

14 st. = 5 cm.

7 st. = $2\frac{1}{2}$ cm.

42 st. = 15 cm.

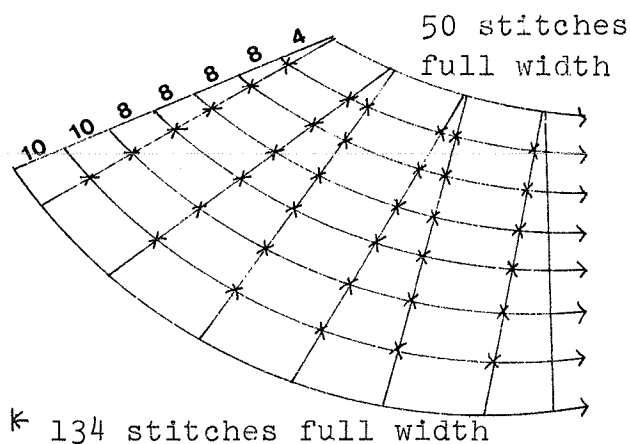
We distribute 7 cables (6 st. ea.) = 42 st + 1 st between cables
(8 st) = 50 st. at neckline.

Width of yoke at bottom: $47\frac{1}{2}$ cm = 133 st (9 x 14 st + 7 st).

Take 134 st. - it suits calculation better - We have to increase
84 st (134 - 50) in 7 panels (6 panels and 2 halves each side).
 $84 \div 7 = 12$, that means an increase of 12 st per panel or 6
increase rows.

Length of Yoke: 14 cm = 56 rows, same as front. We have 6 increase
rows and 7 sections. We distribute: 4 - 8 - 8 - 8 - 8 - 10 - 10 =
56 rows or 2 - 8 - 8 - 8 - 10 - 10 - 10 = 56 rows.

As we can see, the
calculations of the back
yoke are quite different from
the front because the propor-
tion is different. We have
only 7 cables instead of 9, but
6 increase rows instead of 5.



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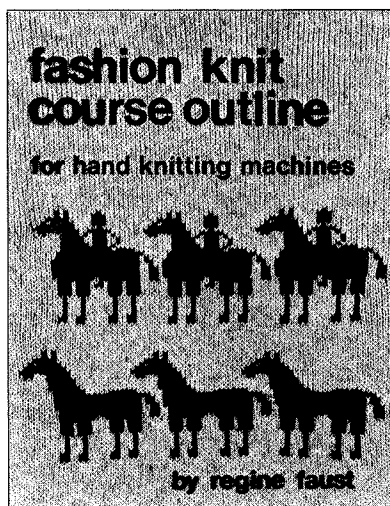
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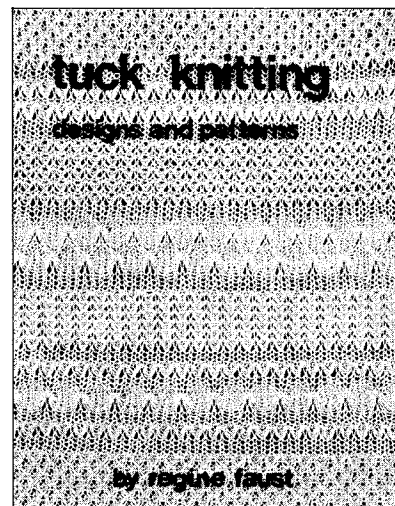
To Regine Faust, Singer extends its best wishes for continued success in all her ventures.

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books by the author



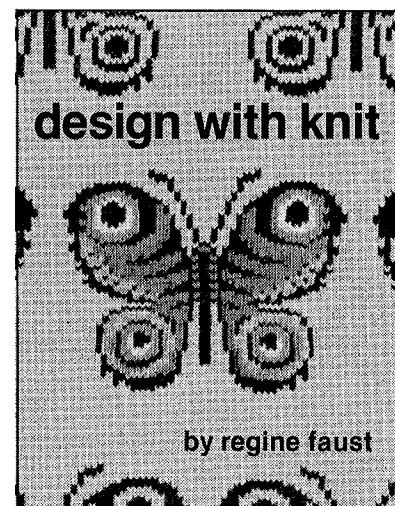
267 pages, graphs, photographs and instructions. The book gives the whole Fashion Knit Course Outline as taught at Sheridan College. It is a perfect guide to everyone who wants to learn more than just the basics.



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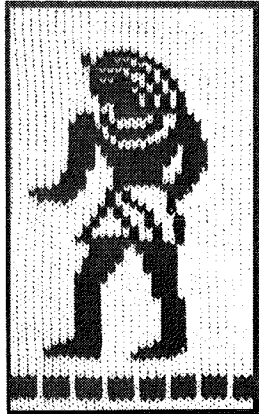
225 pages of American Indian Designs from the great lakes to the West Coast. The Designs are adapted to Machine Knitting as well as Hand Knitting. About 100 full page photographs of knitted samples including 16 colour pages, with graphs and punchcards, instructions and special hints.



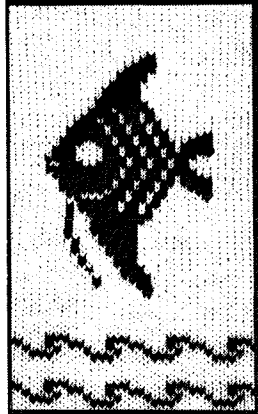
Design with Knit is the latest book. It has 240 pages of knitted samples and explanations, including 64 full size colour prints. As well as punchcard patterns there are 30 new cards for electronic knitting with instructions on how to program them.

REGINE FAUST

punchcard patterns



Series 100



Series 200



Series 240

Series 100 Egyptian Designs

Series 200 Fish & Sea Creatures

Series 240 Butterfly Designs

Series 300 Indian Designs

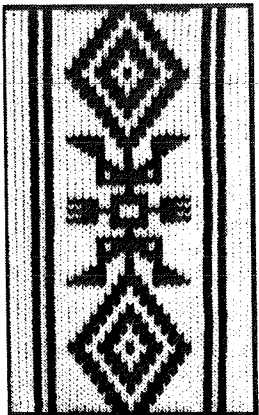
Series 320 Mexican Designs

Series 340 Hawaiian Designs

Series 500 Plaid Designs

Series 520 Argyle Designs

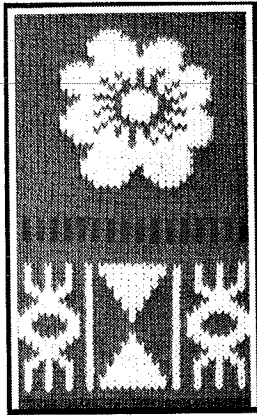
Series 540 Small Borders



Series 300



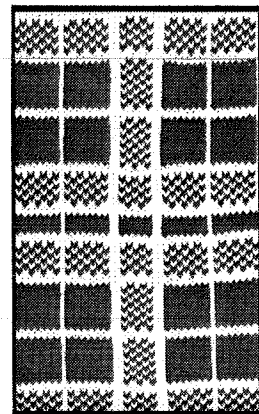
Series 320



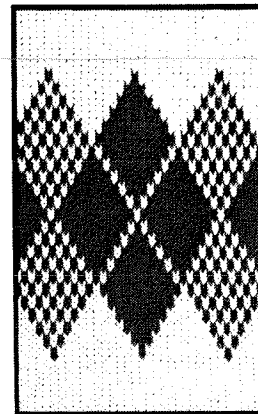
Series 340

9 different sets of 10 cards each are pre-printed and ready for you to be punched. They fit on SINGER, STUDIO, KNIT-KING, BROTHER, TOYOTA, KNIT-MASTER and EMPISAL knitting machines. Order them through your local knitting machine Dealer.

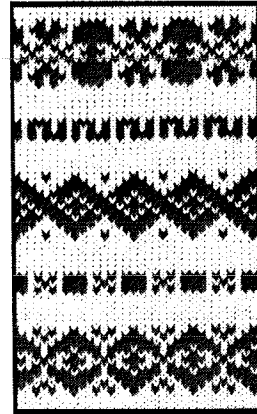
Distributor for Canada: SINGER COMPANY OF CANADA, 200 St. Louis Street, St-Jean-sur Richelieu, Quebec, J3B 1Y1



Series 500



Series 520



Series 540

International Distributor: MCAINSH & CO. LIMITED, 10 Carnforth Road, Toronto, Ontario, M4A 2S5



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It is just a start of a new collection. Carol Scheuble is interpreting some of Regine's knit designs into sweaters with detailed instructions and graphs written for small, medium and large sizes. The pattern are suitable for SINGER, STUDIO, KNITKING, BROTHER machines. New additions are frequently added to the collection. For additional information write to:

CAROL SCHEUBLE, R and C PATTERNS, 1801 SOUTHVIEW BLVD., SO. ST. PAUL, MINN. 55075

